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ABSTRACT

AS PART OF THE REPORT ON THE CALIFORNIA STATE LIBRARY PROCESSING CENTER (CSL-PC) DESIGN AND SPECIFICATIONS, THIS VOLUME COVERS: (1) FILE MAINTENANCE, A DISCUSSION OF UPDATING SYSTEM FILES WITH NEW ENTRIES AND MARC TAPES; (2) AUTHORITY VERIFICATION, THE CORRECTION AND STANDARDIZATION OF SUBJECT HEADINGS AND AUTHOR NAMES; (3) THE FILING SYSTEM FOR A BOOK CATALOG, AN ANALYSIS OF BIBLIOGRAPHIC FILING RULES WITH A RECOMMENDATION FOR COMPUTER IMPLEMENTATION; (4) THE FORMAT FOR A BOOK CATALOG, CONTAINING SPECIFICATIONS OF ENTRY FORMATS AND PAGE LAYOUTS FOR BOOK CATALOGS; AND (5) THE PROCESSING CENTER ORGANIZATIONAL DESIGN, A DESCRIPTION OF THE PRELIMINARY ORGANIZATION OF THE PROCESSING CENTER AND KEYING INSTRUCTIONS. (JB)

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CALIFORNIA STATE LIBRARY:

PROCESSING CENTER DESIGN AND SPECIFICATIONS

VOL. II: FILE MAINTENANCE AND OUTPUT PROCESSING

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and
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April 1969

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I. SYSTEM FILE ORGANIZATION AND STRUCTURE

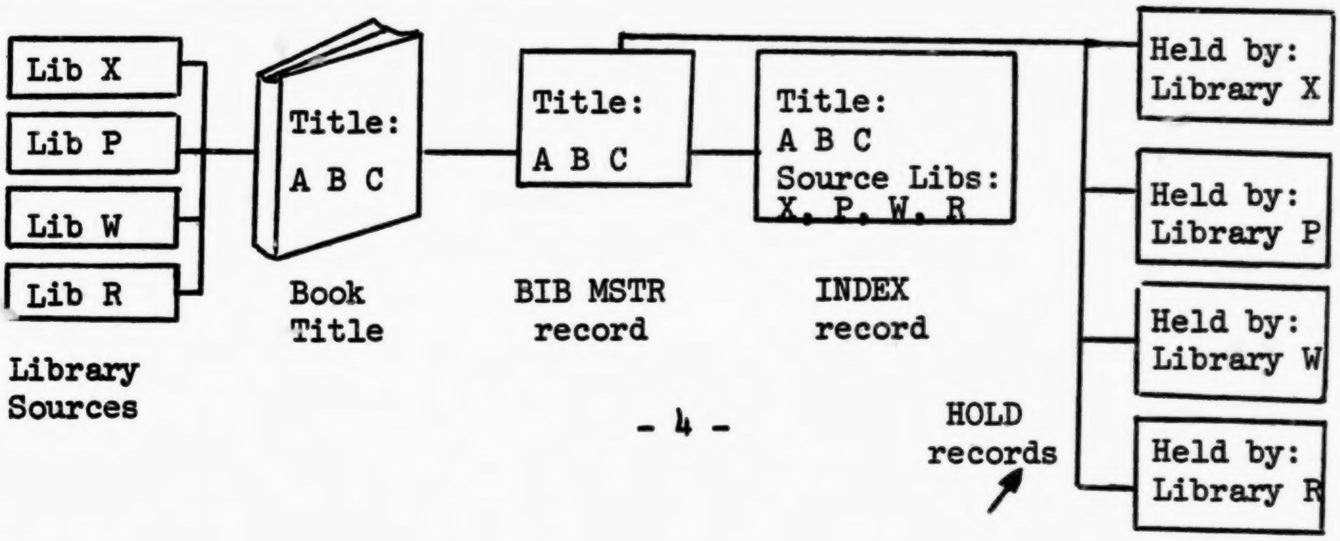
The central functions of the CSL-PC machine file organization are as follows:

1. Storage of a single central bibliographic record representing a unique bibliographic entity, i.e. book title. The sources of this central master record may be current MARC tapes distributed by L.C., retrospective conversion of a network library, or current acquisitions of a network library.
2. Location and identification of duplicate bibliographic records, as they enter the file. This is crucial in preserving the isomorphism between master file records and book titles.
3. Representation of duplicated holdings among network libraries, including the preservation of significant local variations.

These three functions are mirrored directly in the three major file structures of the CSL-PC system: named simply Bibliographic Master File (BIB MSTR), Title/Author Index File (INDEX), and Holdings File (HOLD).

MAINT Fig. 1: PROCESSING CENTER FILES

CSL-PC FILES	MNEMONIC TAGS	RECORDS
1. Bibliographic Master File	(BIB MSTR)	Book Title Descriptions
2. Holdings File	(HOLD)	Library Holdings
3. Title/Author Index File	(INDEX)	Condensed Title Descriptions

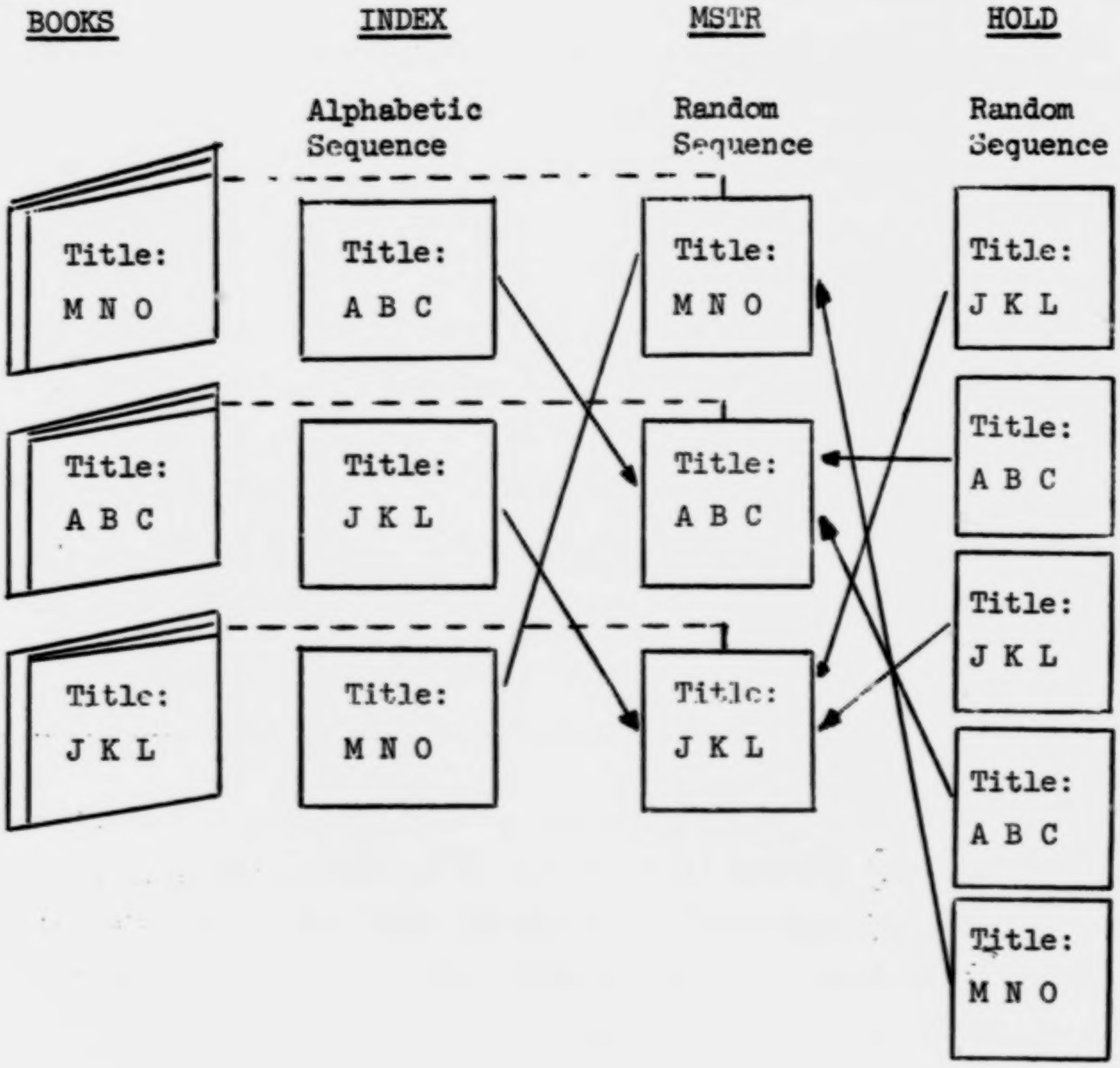

Lib X
Lib P
Lib W
Lib R
Library Sources
Title: A B C
Book Title
Title: A B C
BIB MSTR record
Title: A B C Source Libs: X, P, W, R
INDEX record
Held by: Library X
Held by: Library P
Held by: Library W
Held by: Library R
HOLD records

BIB MSTR records contain the basic data elements which describe each unique monograph book title in the system. (Different editions of the same book are considered different titles.) The data element set is defined by the MARC II standards. HOLD records indicate in which network library collections the book title is found; HOLD records also describe the holding library's call number and subject access points (tracings). INDEX records are an abbreviated and condensed version of BIB MSTR records, reduced to about one-tenth the number of characters, and are used chiefly for searching for book title duplications.

INDEX. The need for an alphabetically sequenced access (INDEX) file derives from the filing and storage characteristics of the BIB MSTR and HOLD files. Both are quite large and are randomly sequenced to avoid excessive updating or interfiling operations. When a new record is added to either file, it is appended to the end of the file without regard to any alphabetic sequencing key. The "order" of the files is then simply an accession number order, represented by a BIB MSTR record ID number (BRIDNO) and HOLD record ID number (HRIDNO). The function of the INDEX file is to create an alphabetically ordered cross reference to the BIB MSTR file. The INDEX file can be searched by alphabetically ordered transaction files of new acquisitions.

To repeat: the BIB MSTR and HOLD files are unordered files; adding a new record to BIB MSTR or HOLD consists of appending that record to the end of the file. The INDEX file is alphabetically ordered (on title and author); adding a new record to INDEX consists of interfiling the new record into its proper alphabetic slot. These relationships are shown in the schematic on the following page.

MAINT Fig. 2: FILE SCHEMATIC


BOOKS
INDEX
MSTR
HOLD
Alphabetic Sequence
Random Sequence
Random Sequence
Title: M N O
Title: A B C
Title: J K L
Title: A B C
Title: J K L
Title: M N O
Title: M N O
Title: A B C
Title: J K L
Title: J K L
Title: A B C
Title: J K L
Title: A B C
Title: M N O

The directional lines in this diagram are pointers carried in each record in the form of the Record ID numbers of the file being pointed to. Thus both INDEX and HOLD records point to a BIB MSTR record by means of containing the BRIDNO of that record. The following example represents the data elements of the three files (MAINT Fig. 3).

MAINT Fig. 3: FILE STRUCTURE EXAMPLE

BIB MSTR FILE		INDEX FILE			HOLD FILE			
Title	Bridno	Title	Bridno	Library Codes	Title	Hridno	Bridno	Library Codes
MNO	001	ABC	002	TZW	MNO	001	001	Z
ABC	002	DEF	004	W	ABC	002	002	T
JKL	003	JKL	003	TWZ	ABC	003	002	Z
DEF	004	MNO	001	ZT	MNO	004	001	T
					JKL	005	003	T
					JKL	006	003	W
					ABC	007	002	W
					JKL	008	003	Z
					DEF	009	004	W

Note that the HOLD file is a complete record of holdings data. Even if a title is held by only one library (such as the title DEF in the example above), there is one INDEX and a HOLD) record for that title (HRIDNO=009). It should also be noted that HOLD records also contain local call number and subject tracings to indicate local variation.

The table above also shows the linkages of the records of all three files utilizing pointers in the form of BRIDNOs. The ability to sort all three files into parallel sequences derives from sorting INDEX and HOLD on BRIDNO (BIB MSTR is already in BRIDNO order). This ability is utilized in retrieval operations in the construction of separate and union book catalogs.

In summary, interfiling and re-arrangement of records and information is performed on only one file: INDEX. The other files simply grow serially and randomly and do not require any resorting or complex processing during file maintenance operations. As previously indicated, the file structure is tape oriented and does not depend on disk storage.

An additional comment may be made regarding the usefulness of the ID numbers in the BIB MSTR and HOLD files. Specifically, the existence of sequential ID numbers permits the two files in question to be partitioned into two kinds of subfiles: first, MARC vs Non-MARC; and second, calendar period divisions. The first division is accomplished simply by reserving a special BIB MSTR ID number series for MARC records, and using the rest for Non-MARC. In our previous example, the BRIDNO's from 900-999 could be reserved for MARC. The time period file partitioning can be determined by simply remembering the HOLD record ID numbers assigned during a given period. Assume HRIDNO's 001-005 were assigned during month 1, and HRIDNO's 006-009 during month 2, etc. Then during month 2 we can reconstruct that library W entered three titles (JKL, ABC, DEF) and library Z entered one title (JKL), based on a selective analysis of HRIDNO's 006-009.

There is one final point to emphasize in the context of file structure, and that relates to MARC II tapes and L.C. cataloging in general. Other library networks have accepted L.C. descriptive cataloging as their standard, and we propose to do the same.

There is of course no way to guarantee that the first time a book title enters the system, it will appear with an L.C. catalog record. If that occurs, there is clearly no alternative but to a accept the non-L.C. record and consider it as the central bibliographic Master File record. However if, subsequently, L.C. cataloging for the same title should enter the system (either via MARC or another holding library), then the original non-L.C. master file record will be deleted and replaced by this later L.C. record.

All INDEX and HOLD file record references to the original record will be altered to refer to this later record (which will have a different BRIDNO than the original).

In light of this, let us reconsider on the following page our previous example, with the arrival of two new LC records: title MNO from library W and title ABC from MARC.

MAINT Fig. 4: IMPACT OF L.C. CATALOGING

BIB MSTR File			INDEX File			HOLD File			
Title	Bridno	LC	Title	Bridno	Library Codes	Title	Hridno	Bridno	Library Codes
***MNO	001	Non	ABC	900*	TZW	MNO	001	005*	Z
***ABC	002	Non	DEF	004	W	ABC	002	900*	T
JKL	003	LC	JKL	003	TWZ	ABC	003	900*	Z
DEF	004	Non	MNO	005*	ZTW	MNO	004	005*	T
** MNO	005	LC				JKL	005	003	T
(MARC subfile)						JKL	006	003	W
** ABC	900	LC				ABC	007	900*	W
						JKL	008	003	Z
						DEF	009	004	W
						MNO	010	005	W

* Changed Bridno references.
** New records-L.C. cataloging
*** Deleted from Master File

In the example above, titles ABC and MNO were originally entered into the files as non-L.C. cataloging. Subsequently, L.C. records for each were entered. Data fields marked with an * represent the changed BRIDNO references. Since the new record for MNO came from library W, an additional record is created in HOLD to reflect library W's duplicate ownership of this title. No new HOLD record is created for title ABC, since there is no additional library holding the title. Although the original records for MNO and ABC remain in the file, they are in effect deleted, since no INDEX or HOLD records reference their BRIDNO's. (An alternate to this procedure, is to update BIB MSTR file periodically, substituting L.C. records in place of non-L.C. records keeping the same BRIDNO's: e.g., **MNO would be updated to have BRIDNO 001, **ABC would have 002.)

II. File Maintenance Logic.

The primary task of the file maintenance sub system is to preserve the integrity, organization and cross referenced structure of the system's three control files: BIB MSTR, INDEX and HOLD. For each file there is a different set of requirements:

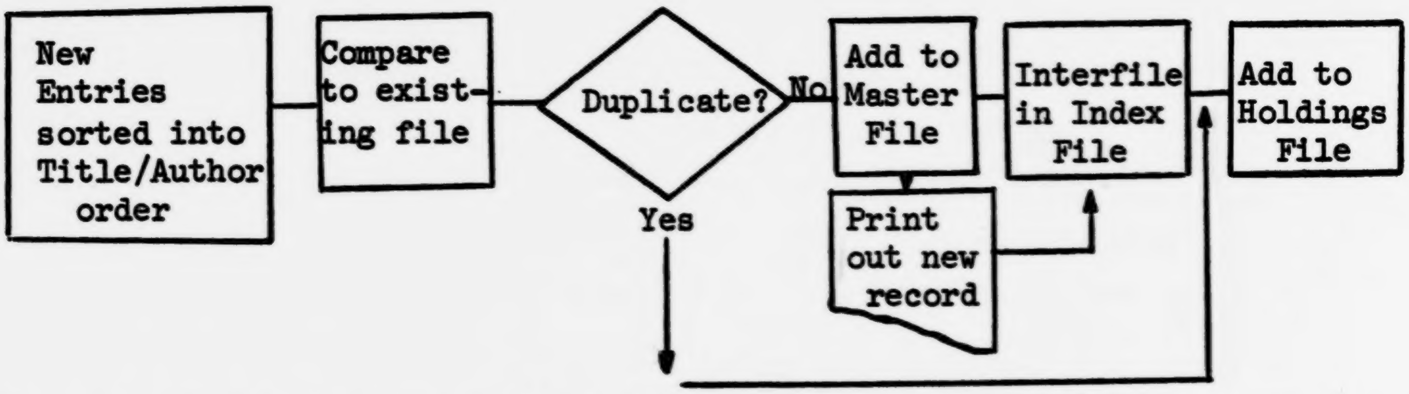
FILE	REQUIREMENTS
1. BIB MSTR (Bibliographic Master)	1.1 Represent each book title by one and only one BIB MSTR record.
	1.2 Partition file into MARC and non-MARC segments.
	1.3 Eliminate frequent sorting/copying of BIB MSTR file. (Allow for possible replacement of non L.C. records.)
2. INDEX	2.1 Preserve reference to BIB MSTR record.
(Title/Author Index)	2.2 Maintain alphabetic Title/Author sequence in INDEX file.
	2.3 Limit size of INDEX file.
3. HOLD	3.1 Preserve reference to BIB MSTR record.
(Library Holdings)	3.2 Carry holding library code and local cataloging variations.
	3.3 Replace references to BIB MSTR non-L.C. records with references to L.C. records, where possible, if BIB MSTR not updated.
	3.4 Eliminate frequent sorting/copying of HOLD file.
	3.5 Partition HOLD file into calendar-time segments.

Each of the processing requirements can be satisfied by constructing a set of primary algorithms to be followed in the file/maintenance sub system, although some requirements are met by the design and contents of the files themselves.

REQUIREMENTS	RESOLUTION
BIB MSTR	
1.1 One BIB MSTR record per title.	1.1 Match each new title against INDEX file; if duplicate, do not add to BIB MSTR.
1.2 MARC and non-MARC segments.	1.2 Reserve separate record ID number series for MARC and non-MARC records.
1.3 Eliminate sort/copy	1.3 Address records to BIB MSTR file serially in record ID number order.

REQUIREMENTS	RESOLUTION
INDEX	
2.1 Reference to BIB MSTR record.	2.1 Carry BRIDNO in INDEX record.
2.2 Title/Author alphabetic file sequence.	2.2 Interfile new records into INDEX file in alphabetic order.
2.3 Limit INDEX size.	2.3 Use fixed length records, with compressed Title/Author data.
HOLD	
3.1 Reference to BIB MSTR record.	3.1 Carry BRIDNO in HOLD record.
3.2 Local variations.	3.2 Carry call number and subject tracings in HOLD record.
3.3 Replace non-L.C. references.	3.3 Maintain a list of BRIDNO's of L.C. non-L.C. record pairs in BIB MSTR. Before using HOLD file exchange BRIDNO's in affected HOLD records, if required.
3.4 Eliminate sort/copy.	3.4 Address records to HOLD file serially in record ID number order.
3.5 Calendar-time file partitions.	3.5 Keep track of HOLD record ID numbers assigned during specific time periods, by recording date of entry in HOLD record.

Resolving the processing requirements determines the overall strategy of the file maintenance operation, which is basically: compare each new entry against the existing file; if there is a matching record, build additional holdings record; if no match, add the current entry to master, index, and holdings files. Schematically this is simply represented:


New Entries sorted into Title/Author order
Compare to existing file
Duplicate?
No
Yes
Add to Master File
Print out new record
Interfile in Index File
Add to Holdings File

However, as has been pointed out by the previous two tables, the overall flow is complicated by many factors, especially the problem of replacing a non-L.C. BIB MSTR record with a newly entered L.C. record for the same title.

The resolution of that problem has been given here as well as in the initial description of system file organization, and will not be repeated here except in schematic form. It should be clearly noted in addition, that the L.C. replacement algorithm covers the inclusion of MARC records in the system files, as will also be shown in the processing schematic, MAINT-5 on following page. The flow begins at the second step of the previous chart, after the batch of new entries has already been sorted into (compressed) Title/Author sequence, to be matched against a similarly compressed and ordered INDEX file.

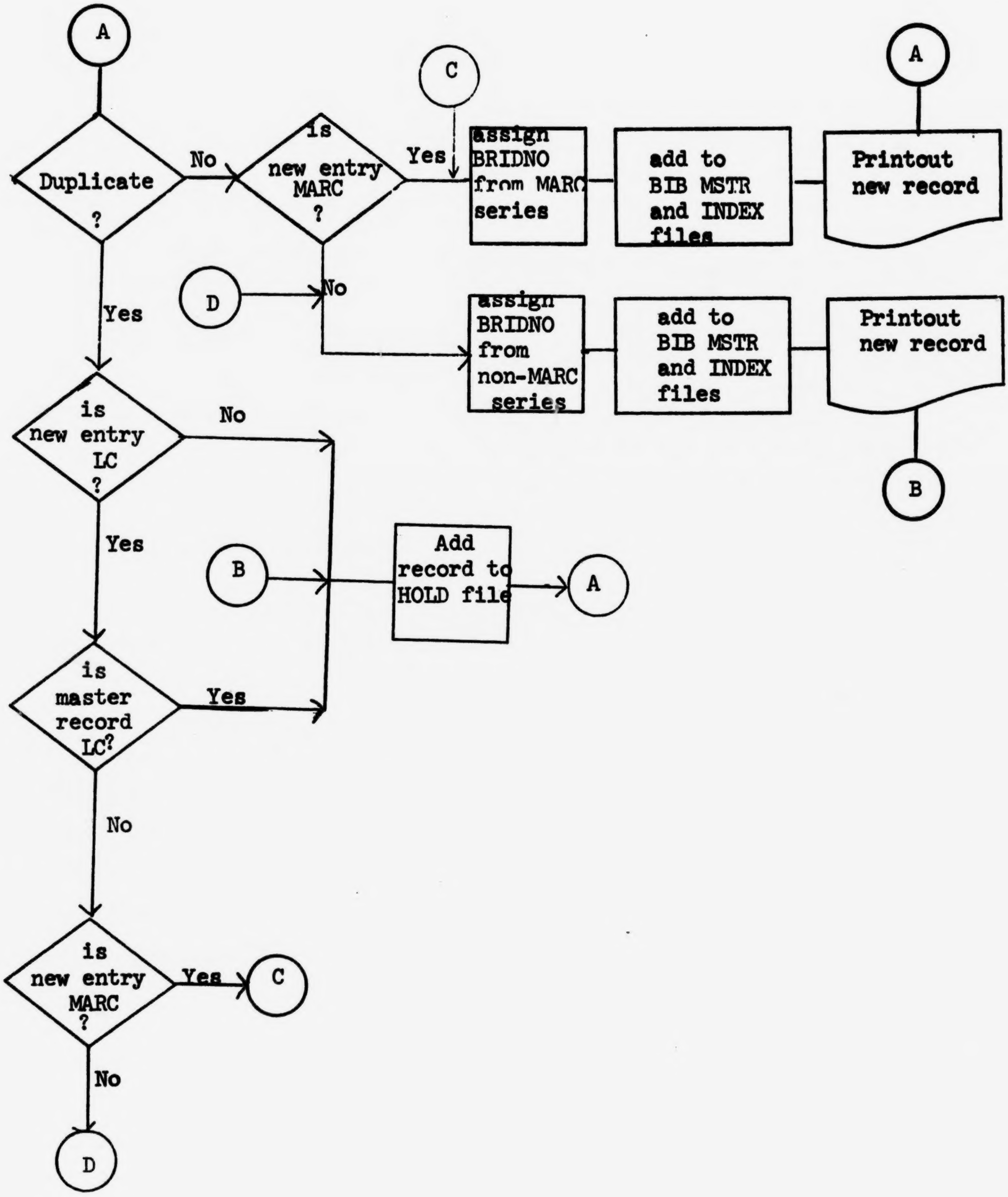
An additional complicating factor in the file maintenance system logic is the composition of any transaction file of new entries. The batch may be composed of both full and partial entries, as previously described. In the context of file maintenance, the table of full/partial entries may be summarized as follows:

Type	Purpose	Maintenance Logic
Full	Retrospective Conversion Current Cataloging MARC tapes	Add to Master File if not duplicate. (See figure MAINT-1)
Partial-Mode I	Search Request	Search Master. If match, return BRIDNO.
Partial-Mode II	File Update	Add data to HOLD file.
Partial-Mode III	Card Request	Access master file and produce cards, labels, etc.
Partial-Mode IV	Wait for MARC	Search newly arrived MARC tapes.

The processing functions for full entries has already been covered in the prior discussion. Additional description is needed for the logic of processing the four distinct types of partial entries.

Partial-Mode I (Search Request). The form of the entry is Author, Title, Transaction Code (=M1), publication date, L.C. card number (if available). The request is made by any network library (other than the first to undertake retrospective conversion) wishing to support its retrospective or current conversion efforts. The logic of the file maintenance system calls for interrogation of the system files via the INDEX file.

MAINT Fig. 5: ENTRY OF MARC RECORDS INTO SYSTEM FILES


A
Duplicate ?
No
Yes
is new entry MARC ?
Yes
No
C
D
assign BRIDNO from MARC series
add to BIB MSTR and INDEX files
Printout new record
A
assign BRIDNO from non-MARC series
add to BIB MSTR and INDEX files
Printout new record
B
is new entry LC ?
No
Yes
B
Add record to HOLD file
A
is master record LC?
Yes
No
is new entry MARC ?
Yes
C
No
D

If the result of a Mode I search is a negative reply, i.e. no matching system record, the response of the requester varies with the intention of his search request. If the transaction record represents cataloged data, either L.C. or non-L.C. cataloging, then the most likely action to take would be to edit and keyboard the full record and enter it into the system. If the request is in support of developing cataloging for a new acquisition, then the requesting library may choose to wait a specified period until the L.C. cataloging arrives via MARC. There is a special file for holding all such "waiting" requests (which could also be a reasonable action to take for current imprints of currently cataloged data). These requests are resubmitted and accumulated into a special Mode IV file, and that file used to search through newly arrived MARC tapes.

If there is a matching record in the system files, the following information is produced with respect to the matching system record: BRIDNO, LC/non-LC status of BIB MSTR record, libraries holding this title. The requester uses this information to index into the Master File List and examine the matching record. The first question to be answered is, does the system record match the requester's transaction record. If not, a system recognition error has occured and must be reported through a monitoring procedure to be studied and rectified. Assuming a bona fide match has been verified, then there are two sets of procedures to be followed depending on whether the intention of the request is to convert an already cataloged record (either retrospective or current) or to supply information to support the technical processing for an uncataloged item (either in acquisition or brief cataloging status).

For a fully cataloged transaction record in Mode I, the set of questions and user actions is outlined on the next page.

MAINT Fig. 6: SEARCH REQUEST TRANSACTION

Step	Question	Answer	User-Action
1.	Is system record L.C.?	Yes	1.1 Proceed to step 2.
		No	1.2 Proceed to step 3.
2.	Do transaction record subject tracings match system record?	Yes	2.1 Add local call number, resubmit as Partial-Mode II, and return.
		No	2.2 Add local call number, varying subject tracings, resubmit as Partial-Mode II, and return.
3.	Is transaction record L.C.?	Yes	3.1 Proceed to step 4.
		No	3.2 Add local call number, all subject tracings, resubmit as Partial-Mode II, and return.
4.	Is descriptive and subject cataloging in system and transaction record identical?	Yes	4.1 Change status of BIB MSTR record to L.C., add local call number, resubmit as Partial-Mode II, and return.
	(cont. on next page)	No	4.2 Prepare full entry to replace system BIB MSTR record, and return.

The basic logic is based on (a) getting L.C. descriptive and subject cataloging into the Master File where possible, and (b) minimizing any conversion editing/keying. The first condition is met by replacing a non-L.C. BIB MSTR record by a varying L.C. transaction record (action 4.2). All other actions are designed to convert the minimum amount of varying information. The only exception is where the system BIB MSTR record is non-L.C.; the only safe thing to do is to convert all transaction subject tracings, since the BIB MSTR record may ultimately be replaced by an L.C. catalog record.

For uncataloged transaction search requests in Mode I, the Question/Action table is somewhat different. (See next page)

MAINT Fig. 6: SEARCH REQUEST TRANSACTION (Cont)

Step	Question	Answer	User-Action
5.	Is system record L.C.?	Yes	5.1 Proceed to step 6.
		No	5.2 Add local call number, all subject tracings, resubmit as Partial-Mode II, and return.
6.	Are subject tracings in system record adequate/appropriate?	Yes	6.1 Add local call number, resubmit as Partial-Mode II, and return.
		No	6.2 Add local call number, varying subject tracings, resubmit as Partial-Mode II, and return.

The basic strategy for uncataloged records is to determine whether there are any changes to be made to the subject cataloging. If the BIB MSTR record is not L.C., then a full set of subject tracings (variations plus identical tracings) must be entered as Mode II partial records, since the master record is still unstable in that it may be replaced any time by an L.C. catalog input.

Partial-Mode II (File Update). All Mode II transactions represent resubmissions of partial data entries that have been through Mode I or Mode IV, which are both search request modes. The form of the entry is at least Author, Title, Transaction Code (=M2), publication date, LC card number, local call number. The remainder of the entry may contain subject tracings in various combinations depending on the mix of conditions. The matrix below outlines all of the possibilities.

Subject Tracings	Cataloged/ Uncataloged	From Action Number*	Sys record L.C. ?	Trans record L.C. ?	Match between sys/trans recd?
none	C	2.1	Yes	---	Yes
none	C	4.1	No	Yes	Yes
variations	C	2.2	Yes	---	No
all	C	3.2	No	No	---
full entry	C	4.2	No	Yes	No
none	U	5.1	Yes	---	Yes
variations	U	5.2	Yes	---	No
all	U	5.2	No	---	---

*See MAINT Fig. 6

Since it is assumed that all Mode II entries do in fact have a matching system record, the failure to find such a match will be flagged as a user error condition (without penalty). The result of a successful match is the creation of new HOLD record in the holdings file, containing library code, local call number, and local subject tracing if appropriate.

Partial Mode III (Card Request). Any Mode II transaction may be submitted as a Mode III transaction as well, with the addition of a BRIDNO as request for a computer printout of catalog cards and book labels. Obviously this would be generally meaningful only for uncataloged transactions. Mode III transactions must be accumulated to a reasonable batch size, since the information requested resides only in the BIB MSTR file, which in turn will reside on many reels of magnetic tape (maximum of 35,000 BIB MSTR records per high density tape). Mode III requests are sorted into BRIDNO order and passed against the Master file; matching BIB MSTR records are pulled off into a separate file for formatting and output.

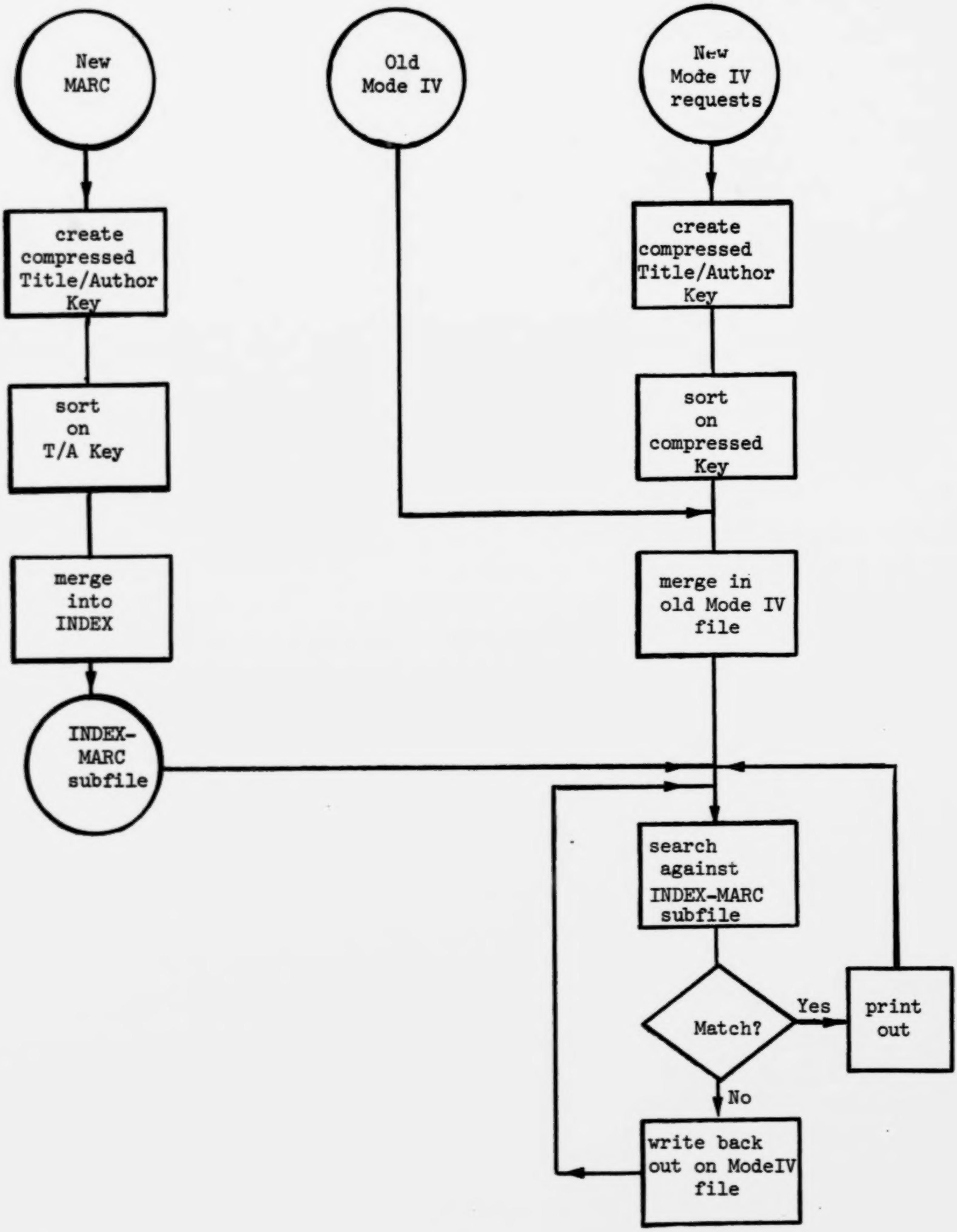
Partial Mode IV (Wait for MARC). This maintenance path is designed for those entries which are current imprints but not yet in the system files, although it is reasonable to expect their imminent arrival. Rather than the requester constantly resubmitting these entries, they are accumulated and held on a special subfile. This Mode IV subfile is maintained in alphabetic order; when a matching entry is found in the system files, that particular Mode IV transaction record is dropped from the subfile. Appropriate time-in-file controls can be built in, since an alternative to Mode IV status is to edit and convert the full entry.

When a new MARC tape arrives it passes through three basic processes:

(1) create compressed Title/Author key.
(2) sort on a compressed Title/Author key.
(3) merge into INDEX file, and pick up or assign BIB MSTR BRIDNO's.

An additional output of this procedure is to generate a file consisting of the INDEX records corresponding to each MARC record in the new batch. This INDEX-MARC subfile can then be matched with the Mode IV subfile, and normal Mode I and Mode II output procedures followed (i.e. output BRIDNO, compare entries and subject tracings, etc.) MAINT Fig. 7 is a flow chart of the Mode IV processing. (See next page)

MAINT Fig. 7: MODE IV PARTIAL ENTRIES - WAITING FOR MARC


New MARC
Old Mode IV
New Mode IV requests
create compressed Title/Author Key
create compressed Title/Author Key
sort on T/A Key
sort on compressed Key
merge into INDEX
merge in old Mode IV file
INDEX-MARC subfile
search against INDEX-MARC subfile
Match?
Yes
print out
No
write back out on ModeIV file

III. Author/Title Compression Coding.

The issue under discussion here is the construction of the Title and Author data elements in the INDEX file records. The rules for the construction of these elements will also extend to any transaction record: Full, and all four Modes of Partial entry transactions. The basic goal is to construct, from the bibliographic description of the book, a cipher or brief code-surrogate for the book. The two requirements for the enciphered representation are:

1. that the cipher be algorithmically derivable from the description of the book.
2. that the book's cipher be as unique with respect to other ciphers as the book's description is with respect to other books' descriptions.

The first goal guarantees that all master records and transaction records pertaining to the same book will develop exactly the same cipher. The second goal attempts to preserve the same levels of discrimination as exist among unenciphered book descriptions, so that one may assume a single referent for any single description. Note that nowhere is there a requirement that the cipher be intelligible or representational (as say an abbreviation would be), or de-cipherable (i.e. return via the same algorithm applied in reverse order).

The general gain here lies in the reduction of the total number of characters in the book description, and also transformation of variable data elements into fixed length short ciphers. That applies to the economics of file storage. However there is additional gain, in that compression will require prior editing, and will therefore also aid in surmounting problems of "noisy matches" encountered in title searching.

The three elements chosen for the cipher are title, author, and publication date. The three elements should combine to form a cipher, (which will be embedded in the INDEX record) which will be a unique description of the book, with a high degree of discrimination. The following discussion will describe how to select subfields from the MARC data set to form the basic elements to be enciphered, and finally what enciphering techniques exist.

In these discussions the authors wish to acknowledge their heavy reliance on techniques developed by William R. Nugent, vice President of Inforonics, Inc., Cambridge, Mass., and utilized in the Inforonics' design for NELINET (New England Library Information Network). Much of what follows is based on Mr. Nugent's work, and we include as an appendix to the chapter, with his permission, a reprint of his recent publication of "Word Coding Techniques for Information Retrieval".

The publication date is most straight forward. It is derived from positions 7 to 10 of MARC fixed field 008, and is carried unenciphered, as a 4 character data field.

Title Enciphering.

Title is slightly more complex. The target for the title field in the INDEX record is an 18 character fixed length data field. To achieve this, a seven step procedure is followed:

1. Select MARC field 245$a (short title)
2. Eliminate punctuation, capitalization and numeric elements.
3. Eliminate words which are common usage or non-distinctive.
4. Save first non-eliminated word.
5. Save also two longest non-eliminated words.
6. If fewer than three words remain, repeat steps 2, 3, and 5 on field 245$b (remainder of title) until three non-eliminated words are available.
7. Use compression coding technique to reduce each word to a fixed 6 character cipher.

Steps 1 and 2 are self explanatory; but it should be noted that this does not solve the problems of abbreviation. Step 3, elimination of non-distinctive words, is based on two word-tables: one derived from Gaines, Cryptanalysis, 1965, and the other from Nugent's NELINET report (Progress Report, July 1, 1967-March 30,1968). These two tables are reproduced here as figures MAINT-8 and MAINT-9.

These two figures are on the next two pages, followed by five examples of the application of rules 1 through 6.

MAINT Fig. 8: EXCLUSION LIST OF SHORTER WORDS OF TITLE

(99 Most Common English Words - After Gaines)

A
ABOUT
AFTER
ALL
AN
ANY
AND
ARE
AS
AT
BE
BEEN
BUT
BY
CAN
COULD
DO
EVEN
FIRST
FOR
FROM
GREAT
HAD
HAS
HAVE
HE
HER
HIM
HIS

I
IF
IN
INTO
IS
IT
ITS
LIKE
MADE
MAN
MAY
ME
MIGHT
MORE
MOST
MUCH
MUST
MY
NEW
NO
NOT
NOW
OF
OLD
ON
ONE
ONLY
OR
OTHER
OUR

OUT
OWN
SAID
SHALL
SHE
SO
SOME
SUCH
THAN
THAT
THE
THEIR
THEN
THEM
THERE
THESE
THEY
THIS
THOSE
TIME
TO
TWO
UP
UPON
US
VERY
WAS
WE
WELL
WERE

WHAT
WHEN
WHICH
WHO
WILL
WITH
WOULD
YET
YOU
YOUR

MAINT Fig. 9: EXCLUSION LIST OF NON-DISTINCTIVE TITLE WORDS

(After Nugent)

ADVANCE-
ADVENTURE-
ANTHOLOGY
APPLICATION-
APPLIED
COMPLETE
CREATIVE
CRITICAL
DEVELOPMENT
DICTIONARY
ELEMENTS
ESSAY
ESSENTIAL-
FOUNDATION-
FUNDAMENTAL-
GENERAL
HANDBOOK
HISTORICAL
HISTORY
INTRODUCTION
LABORATORY
LETTERS
MAKING
MANUAL
METHOD-
MODERN
MYSTERY
NATURE
OUTLINE-
PRACTICAL
PRINCIPLE-
PROBLEM-
READINGS
SECRET
SELECTED
SHOULD
STUDIES
TECHNIQUE-
TEXTBOOK
THEORY
TREASURY
TREATISE
UNDERSTANDING

Five examples of the application of rules 1 through 6:

	Title Subtitle	SELECTED KEY WORDS
1.	How to Solve It	HOW
	a New Aspect of Mathematical Method	SOLVE
		MATHEMATICAL
2.	Organic Chemistry	ORGANIC
	An Outline of the Beginning Course	CHEMISTRY
	Including Material for Advanced Study	BEGINNING
3.	Introduction to Electricity and Optics	INTRODUCTION
		ELECTRICITY
		OPTICS
4.	Webster's New Collegiate Dictionary	WEBSTERS
	Based on Webster's New International	COLLEGIATE
	Dictionary	INTERNATIONAL
5.	Subject Headings Used in the Dictionary	SUBJECT
	Catalogs of the Library of Congress	HEADINGS
		CONGRESS

Note that all three words are used in example three, since there is no subtitle to supply additional distinctive words as in example two. The above represents the application of steps 1 through 6. A discussion of step 7 will be deferred until after the algorithm for selecting author names has been described.

Author Enciphering.

Using author as a key for searching and encipherment will yield quite a bit less discrimination than titles. The universe of discourse is far more limited than the vocabulary possible in titles, and authors frequently write more than one title. Thus we will aim for two 6-character ciphers, one for surname and one for forename. It should be remembered that author will be used jointly with title in constructing a total cipher, so that its power lies very much in its use as an extra discriminator.

In our file we have three main entry author possibilities: personal (tag 100), corporate (tag 110), conference (tag 111). (We also have two title main entry conditions.) The selection of the two data elements to be enciphered depends on the main entry type and then on the form of the entry. For personal author, both single and compound surname main entries, the choice is obvious: surname and forename. In those personal authors lacking a two element name, i.e. in forename and family name form, other elements such as Numeration, title, or date may be used as a forename data element.

In the case of corporate authors, the form of heading (inverted surname, place, direct order name) is not controlling; rather it is the presence of the $b subfield--subordinate unit in corporate hierarchy--which determines the choice of elements. The lowest level of hierarchy should be selected as being most specific; after eliminating common corporate tags (Dept, division, bureau, institute, etc.), the two longest remaining terms at the lowest echelon should be selected. The following examples should give an idea of the procedure.

	Corporate Author	SELECTED KEY WORDS
1.	American Library Association. Division Cataloging and Classification	CATALOGING CLASSIFICATION
2.	Department of Health,Education and Welfare. Bureau of State Services. U.S. Public Health Service. National Institutes of Health. Institute of Dental Research	DENTAL RESEARCH

Conferences follow a similar algorithm, except that the second data element should be an amalgam of the number and date MARC data elements; the first element is again the lowest echelon of hierarchy.

It should be emphasized that there are strong alternatives to the selection of Key word data elements for encipherment, especially for non-personal author main entries, where the name cipher could be meaningfully used in a variety of ways. It is very difficult to recommend strongly any alternative without some empirically derived quantitative evidence. This evidence can be gathered from experimenting with various forms of the algorithms and comparing results.

Enciphering Techniques.

W.R. Nugent's paper, included as an appendix to this chapter, contains a complete survey of compression coding techniques. The techniques divide into two separate types: (1) those that reduce "noise" by creating the same cipher for slightly differing inputs; and (2) those which attempt to preserve the differences and variations among inputs, while reducing the number of characters in the total expression. It is only techniques of the second category that we are interested in.

The reduction in character size can be achieved by randomizing the usage of letters. For example, if all letters were equally distributed, we could expect to encode 1,679,616 names in only four alpha-numeric characters. But of course letters are not equally distributed, certain combinations are impossible to pronounce, etc. Hence the basic coding technique is to randomize or equalize the letter distribution frequencies. The more random the code, the greater its ability to build unique ciphers, and also the lower its legibility. Nugent recommends three coding techniques that are reasonable to consider: two of these yield legible results, the third is completely random. The table below gives examples of each applied to three similar surnames.

Surnames	Code I	Code II	Code III
JOHNSEN	BFTZ	JHNSEN	JOHNSV
JOHNSON	DNWU	JHNSON	JOHNSX
JOHNSTON	ZIKY	JHSTON	JOHNSD

Code I is called Transition Distance Coding. It is a randomizing code based on permuting the letters in the text, assigning prime numbers to the measured distances (ordinally speaking) between letters, and multiplying these primes modulo the capacity of the computer. The result is of very high resolution, low readability, and also would involve a higher amount of computer processing than Codes II or III.

Code II is called Recursive Decomposition. It is based on a frequency ordered table of letters and operates by considering a letter and its predecessor. If the letter is not lower in the frequency table than its predecessor, then the letter is eliminated. Thus a statistical advantage is given to the lower frequency letters. The process is repeated recursively until only six letters remain. The ordered operation of the algorithm adds a randomizing aspect. The result is semi-legible. The method is simple and computationally rapid, and returns maximum legibility for word suffixes if recursiveness is from left to right.

Code III is called Alpha check. It is a simple truncation code (cut off after the first five characters), plus the addition of an alpha-numeric check digit which is a single cipher for the truncated characters. Transition Distance Coding is used to generate the alpha-numeric check digit. The result is fairly legible, at least out to the first five characters.

IV. File Format Specifications

Present design specifications of the CSL file organization require a single bibliographic record in the Master File with variations between system libraries to be preserved in the Holdings file. Each system library may have branch libraries which may (or may not) have duplicate holdings for a given title. The holdings variations of these satellite libraries can be preserved and processed within the CSL system similar to the method outlined for the system libraries.

Index Format

Several alternatives are available as to the type of information that may be held in the Index record. In addition to the primary and secondary title keys, the presence of some statistical information may negate the need for accessing the other files--particularly in those modes where only a partial (or query) search is required. For 32 system libraries, say, a four character code (assuming an 8 bit byte) would specify which libraries hold that title. Another code would indicate whether or not the record is LC. An additional character in the record could contain the total number of holdings in the network for a given title.

	COMPRESSED TITLE	COMPRESSED AUTHOR	DATE	LIBRARY HOLDINGS	NUMBER	LC FLAG	TRIDNO	BRIDNO	TOTAL
CHARACTERS	18	12	4	4	1	1	6	6	52

INDEX RECORD FORMAT

The branch library information is suppressed at this level since the additional information in the record need only apply to the system library. Furthermore, when the total number of copies has reached a threshold level (or the monograph is termed "popular") then it would no longer be necessary to retain the additional information in the record since it could be assumed that all system libraries hold the title. For 2400 foot magnetic tapes at 800 bpi density, one million index records would require 3 tapes. This calculation assumes a blocking factor of 2048 characters and 3/4 inch dead space between physical records--resulting in 342,000 logical records per tape.

Each 2048 character physical block will contain 39 logical records, leaving a 20 character surplus. These 20 characters will be used as a block directory containing the number of logical records in the block and the compressed title of the last logical record in the block. This block directory will be the initial 20 characters of the physical record. Thus the range of the block will be specified by characters 21-38 (compressed title of first logical record) and 3-20 (compressed title of last logical record). A similar directory system, utilizing BRIDNO's, will be utilized in the BIB MSTR logical record blocking procedure.

Bibliographic Record (BIB MSTR)

The random ordered Master File acts as a depository for all bibliographic information pertaining to the title. LC records take priority over non LC in the file with all system and branch libraries addressing a single bibliographic entry. If a system library has entered a non LC record and an LC record for the title does exist, then the non LC record is dropped and the system library's variations are preserved in its holding record.

The format for the bibliographic record is the MARC II standard and is the same as that formed by CON in the Conversion System chapter. One exception is that the BRIDNO has now been inserted into characters 18-24 of the leader. The records contained on the MARC II test tape vary in size from 299 to 1142 characters with an average logical length of 580 characters. Assuming this average length together with:

1. 2400 foot magnetic tape at 800 bpi density
2. 2048 characters/physical record and 3/4 inch "dead space" per physical record,

one tape would hold 30,900 logical records, or one million bibliographic records would require 33 tapes.

Holdings Record (HOLD)

The randomly ordered HOLD file preserves local library variations in both descriptive and subject cataloging. It also identifies which libraries own which titles. The format of the record is also the MARC II standard as developed by the Library of Congress. Obviously the only data elements which will occur in a HOLD record will be those which represent local practice variations.

However the following format characteristics can be stated:

1. Each HOLD record will have an 090 data field (Holdings statement)
2. Positions 18-24 of the HOLD record leader will contain a HRIDNO
3. A new seven character subfield ($b) will be added to the 090 data element to represent BRIDNO.

It is difficult to speculate on the average record length of the HOLD file. Twenty-five percent of the BIB MSTR record size, or 150 characters appears to be a reasonable estimate. Assuming the same tape size, density and blocking factor as before, a single tape will hold 123,000 logical records, and a million Holdings records would require 8 tapes. (It should be remembered that as yet there are no accurate measures of the ratio of Holdings to Titles, and hence no reasonable guesses about the size relationships between the HOLD and the BIB MSTR files.)

APPENDIX:

W.R. Nugent, "Compression
Word Coding Techniques for
Information Retrieval."

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Library Automation*, Vol.1, No. 4
December, 1968, pp. 250-260.

COMPRESSION WORD CODING TECHNIQUES FOR INFORMATION RETRIEVAL

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A description and comparison is presented of four compression techniques for word coding having application to information retrieval. The emphasis is on codes useful in creating directories to large data files. It is further shown how differing application objectives lead to differing measures of optimality for codes, though compression may be a common quality.

INTRODUCTION

Cryptographic studies have documented much useful language data having application to retrieval coding. Because unclassified cryptographic studies are few, Fletcher Pratt's 1939 work (1) remains the classic in its field. Gaines (2) has the virtue of being in print, and the more recent cryptographic history of Kahn (3), while comprehensive, lacks the statistical data that made the earlier works valuable. The word coding problem for language processing, as opposed to cryptography, has been extensively studied by Nugent and Vegh (4). Information theorists have contributed the greatest volume of literature on coding and have added to its mathematical basis, largely from the standpoint of communications and error avoidance.

A brief discussion of compression codes and their objectives is here presented, and then a description of a project encompassing four compression codes having application to retrieval directories. Two of the codings are newly devised. One is Transition Distance Coding, a randomizing code that results in short codes of high resolving power.

The second is Alphacheck. It combines high readability with good resolution, and permits simple truncation to be used by means of applying a randomized check character that acts as a surrogate of the omitted portion. It appears to have the greatest potential, in directory applications, of the codes considered here.

Recursive Decomposition is a selected letter code devised by the author several years ago (4). It has been tested and has the advantages of simple derivation and high resolution.

Soundex(5) is the only compression code that has achieved wide usage. It was devised at Remington Rand for name matching under conditions of uncertain spelling.

OBJECTIVES OF COMPRESSION CODING

It is desired to transform sets of variable length words into fixed length codes that will maximally preserve word to word discrimination. In the final directories to be used, the codes for several elements will be accessible to enable the matching of several factors before a file record is selected. The separate codes for differing factors need not be the same length, though each type of code will be of uniform length; nor need the codes for differing factors be derived by the same process.

What we loosely call codes, must be formally designated ciphers. That is, they must be derivable from the data words themselves, and not require "code books" to determine equivalences. This is so because the file directories must be derivable from file items, entries in directory form must be derivable from an input query, and these two directory items must match when a record is to be extracted. The ciphers need not be decipherable for the application under consideration, and in general are not.

Fixed length codes which provide the rough equivalent and simplicity of a margin entry in a paper directory, are generally desirable for machine directories.

The functions of the codes will determine their form, and a code or file key designed to meet one objective will generally not be satisfactory for any other objective. The following typical objectives serve as four examples:

(1) Create a file key for extraction of records in approximate file order, as is required for the common Sorting and Printout Problem. A typical code construction rule is to take the first six letters.

JOHNSEN —▶ JOHNSE
JOHNSON —▶ JOHNSO
JOHNSTON —▶ JOHNST
JOHNSTONE —▶ JOHNST

(2) Create a file key for extraction of records under conditions of uncertainty of spelling (airline reservation problem). A typical code construction rule is Vowel Elimination or Soundex. A typical matching rule is best match.

Vowel Elimination	*Soundex*
JOHNSEN → JHNSN	J525 → J52
JOHNSON → JHNSN	J525 → J52
JOHNSTON → JHNSTN	J5235 → J52
JOHNSTONE → JHNSTN	J5235 → J52

(3) Create a file key extraction of records from accurate input, with objective of maximum discrimination of similar entries (cataloging search problem). Typical code construction rules are Recursive Decomposition Coding or Transition Distance Coding.

Recursive Decomposition	*Transition Distance*
JOHNSEN → JHNSEN	BFTZ
JOHNSON → JHNSON	DNWU
JOHNSTON → JHSTON	ZIKY
JOHNSTONE → JHSONE	ECRC

For the file keys of primary concern accurate imput data is assumed and the objective is maximum discrimination. Desirably, a code would be as discriminating as Transition Distance Coding and be as readable as truncation coding. This can be achieved to some degree by combining the two codes into one, with an initial portion truncated and a final check character representing the remainder via a compressed Transition Distance Code: Alphacheck.

(4) Create a file key for human readability and high word to word discrimination. Possible code construction rules are Alphacheck, and simple truncation plus a terminal check character.

JOHNSEN → JOHNSV
JOHNSON → JOHNSX
JOHNSTON → JOHNSD
JOHNSTONE → JOHNS3

METHODS

The algorithms for creating the preceding codes are described in the following sections.

It is axiomatic that randomizing codes give the greatest possible discrimination for a given code space. The whole trick of creating a good compression code is to eliminate the natural redundancy of English orthography, and preserve discrimination in a smaller word size.

Letter-selection codes can only half accomplish this, due to the skewed distribution of letter usage. They can eliminate the higher-frequency components, but they cannot increase the use of the lower-frequency components.

Randomizing codes—often called "hash" codes, properly quasi-random codes—can equalize letter usage and hence make best use of the code space. Prime examples here are the variants of Gödel coding devised by Vegh(4) in which the principle of obtaining uniqueness via the products of unrepeated primes is exploited, as it is in the randomizing codes considered here. The problem in design of a randomizing code is that the results can be skewed rather than uniformly distributed due to the skewed nature of the letters and letter sequences that the codes operate on.

In Transition Distance Coding, the natural bias of letters and letter sequences is overcome by operating on a word parameter that is itself semi-random in nature. The following principle, not quite a theorem, applies: "Considering letters in their normal ordinal alphabetic position, and considering letter transitions to be unidirectional and cyclic, the distribution of transition distances in English words is essentially uniform."

In view of the fact that letter usage has an extremely skewed distribution, with a probability ratio in excess of 170 to one for the extremes, it is seen that the more uniform parameter of transition distances is a superior one for achieving randomized codes. The relative uniformity of transition distance needs further investigation, but one typical letter diagram sample from Gaines(2) with 9999 transitions (means number of occurrences of each distance = 385) yielded a mean deviation of 99 and a standard deviation of 123, and an extreme probability ratio of 3.3 to one for the different transition distances from 0 to 25. The distribution can be made more uniform by letter permutation. Permutation is used in the algorithm for Transition Distance Coding but not in Alphacheck.

Algorithm

The method of Transition Distance Coding is used to operate on a variable length word to achieve fixed length alphabetic or alphanumeric codes that exhibit quasi-random properties. The code is formed from the modulo product of primes associated with transition distances of permuted letters. The method is intended strictly for computer operation, as it is a simple program but an extremely tedious manual operation. There are five steps:

(1) Permute characters of natural language word. This breaks the diagram dependency that could make the transition distances less uniformly distributed. This step might be dispensed with if the resulting distributions prove satisfactory without it. The permutation process consists of taking the middle letter (or letter right of middle for words with an even number of letters), the first, the last, the second, the next-to-last, etc.

until all letters have been used. That is, for a letter sequence:
$a_1, a_2, \ldots a_i \ldots, a_n$
The following permutation is taken:
$a_{\mathrm{Int}}(\frac{n}{2}+1), a_1, a_n, a_2, a_{n-1}, \ldots a_{(1+i)}, a_{(n-i)}, \ldots a_{\mathrm{Int}}(\frac{n}{2}+1) +_{4} \mathrm{Rem}(\frac{n}{2})$
where Int and Rem refer to the integer part and remainder, respectively. To illustrate a typical case:
JOHNSEN —▶ N J N O E H S

(2) Take transition distances of the characters. Assign letters a position value corresponding to their normal ordinal alphabetic positions excepting Z, which is equated to 0, (e.g., A=1, Y=25, Z=O), and take the transition distances between successive letters of the input sequence. Distance is measured unidirectionally in alphabetic order, and cyclically ("around the bend," Z to A.) The sequence AX has the transition distance N_X-N_A=24−1=23. Negative distances are converted to their positive cyclic distance by taking their 26 complement. That is, the sequence XB has the transition distance N_B−N_X=2−24=−22→26−22=4. To follow the 'JOHNSEN' example:
NJNOEHS —▶ (14,10,14,15,5,8,19) —▶ (22,4,1,16,3,11)
letter numbers distances

(3) Associate with each transition distance a corresponding prime number. Table 1 shows the primes corresponding to the transition distances, beginning with 5 so that the alphanumeric base (36) and all numbers are relatively prime. Following the example above:
(22,4,1,11,3,11) —▶ (89,13,5,61,11,41)
distances primes

(4) Multiply these primes, modulo the capacity of the computer. Integer multiplication in single precision is effected, disregarding overflow. For a computer with an 18-bit word length containing a 1-bit sign position, multiply modulo 2^{17}. That is, disregard product portions that equal or exceed 131,072. For a machine of this type, then, there will be generated a quasi-random number in the range of 0 to 131, 071. This is converted to alphanumeric form in the next step. Following the example:
89 x 13 x 5 x 61 = (352,885) Mod2^{17} = 90,741
90,741 x 11 = (998,151) Mod2^{17} = 80,647
80,647 x 41 = (3,306,527) Mod2^{17} = 39,727

(5) Convert to alphabetic or alphanumeric form. Now express the number derived above as an integer base 26 (alphabetic form) or base 36 (alphanumeric form) using a 4-digit code. In the case of alphabetic representation use the letters to represent the numbers of their ordinal position (A=1, B=2,

etc.), and use Z as zero. In alphanumeric form one would use the digits 0 to 9 to represent this range, and the letters A through Z would represent the range from 10 to 35.
Using the 18-bit word length assumed, the alphabetic form is as good as the alphanumeric. The range of the random number extends to 131,071; the range of four-digit alphabetic representation extends to $(26^4-1)=256,975$; the range of 4-digit alphanumeric representation extends to $(36^4-1)=1,676,615$. Hence, the alphabetic representation is sufficient. Divide the random number successively by 26^3, 26^2, 26^1, and 26^0 to obtain the alphabetic form. For example:
$39,727/26^3=2+\text{Rem } 4575 \longrightarrow \text{B}$
$4575/26^2=6+\text{Rem } 520 \longrightarrow \text{F}$
$520/26^1=20+\text{Rem } 0 \longrightarrow \text{T}$
$0/26^0=0 \qquad\qquad \longrightarrow \text{Z}$
JOHNSEN ⟶ BFTZ

Alphacheck

Alphacheck is a means for creating a randomized alphanumeric check digit. When used with a selected letter compression code, it operates on the missing letters to generate a single character surrogate. It is used to add discrimination to a simple truncation code, in the hope of attaining a compression code that is both readable and resolving.

A process practically identical to that of Transition Distance Coding is used, except that at the final step the random number is taken modulo 36 and expressed as an alphanumeric character. The ten numeric digits represent themselves, and the letters A to Z represent the mod 36 numbers from 10 to 35, or their ordinal alphabetic value plus nine.

In this case, the difference between an alphabetic representation and an alphanumeric one is significant, since only one character is used, and the range of the Alphacheck character is much smaller than the range of the binary random number it is derived from.

The probability of no repetition of Alphacheck codes in a sample of size r, is a case of determining the probability of uniqueness for sampling with replacement from a population n, for which:

$$p=\frac{n!}{n^r\,(n-r)!}$$

where n is the range of the code, for alphanumeric Alphacheck, n = 36.

The median of the distribution of p, r_m gives the sample size for which the probability of uniqueness is 0.5. This is estimated by taking the logarithmic form of p, which yields a good approximation when n is large with respect to r.

$$\text{Ln } p \sim -\frac{r^2}{2n}\ ;\ r_m \sim [2n\ \text{Ln}(.5)]^{1/2} = 1.18\ n^{1/2} = 7.08$$

By comparison, r_m for n=26 is 6.05; for n=131.072 (Transition Distance Coding in 4 characters and modulo 2^{17}) r_m is 427.

One may conclude that the alphanumeric Alphacheck (36 symbol) has a 50% expectation of uniquely resolving seven otherwise identical five-letter truncations of source words. It offers a one-word advantage over the 26-symbol alphabetic Alphacheck.

Algorithm

It is not appropriate to use the identical randomizing method of T.D.C. (Transition Distance Coding), since this was designed to operate on full words, because it is desirable to operate on the omitted remainders of truncated words, which are often as short as two letters. When a two-letter remainder exists only one transition distance is involved, and hence only one prime number; and the individual primes are not uniformly dis-

Table 1. Letter Positions and Primes used in Transition Distance Coding and Alphacheck.

Letter	*Letter Position and Distance Value*	*Prime Number*
A	1	5
B	2	7
C	3	11
D	4	13
E	5	17
F	6	19
G	7	23
H	8	29
I	9	31
J	10	37
K	11	41
L	12	43
M	13	47
N	14	53
O	15	59
P	16	61
Q	17	67
R	18	71
S	19	73
T	20	79
U	21	83
V	22	89
W	23	97
X	24	101
Y	25	103
Z	0	107

tributed modulo 36. Hence, in the case where only one transition distance exists, the corresponding prime is multiplied by two additional primes corresponding to the letters involved (Table 1.) If only two distances are involved, associate another prime corresponding to the last letter. Since randomization is created largely by the multiplicative properties of the process, at least three factors are multiplied in all cases. Except for this difference in step three, the randomizing process is essentially identical to that of TDC. The steps are:

(1) If word is six letters or less take whole word; otherwise, take first five letters and compute an Alphacheck character for the sixth, based on the omitted letters.
(2) Take transition distances of the omitted letters (as in TDC).
(3) Associate with each transition distance a corresponding prime number (as in TDC). If only one transition distance exists, additionally associate prime numbers with the remaining letters. If only two transition distances exist, additionally associate a prime number with the last letter.
(4) Multiply these primes, modulo the capacity of the computer (as in TDC).
(5) Convert to alphanumeric form in 1 symbol, modulo 36, in which 0 —> 1, . . . , 9 —> 9, 10 —> A, 11 —> B, . . . , 35 —> Z.

The example of the JOHNS—names, shown in Table 2 illustrates the process.

Table 2. Example of Key Generation by Alphacheck.

Name	JOHNSEN	JOHNSON	JOHNSTON	JOHNSTONE
Truncated Portion	JOHNS	JOHNS	JOHNS	JOHNS
Remainder	EN	ON	TON	TONE
Letter #	5,14	15,14	20,15,14	20,16,14,5
Distance	9	25	21,25	21,25,17
Distance Primes	31	103	83,103	83,103,67
Letter Primes	17,53	59,53	53	-
Product	27,931	322,081	453,097	572,783
Mod 2^{17}	27,931	59,937	59,881	48,495
Mod 36	31	33	13	3
Alphacheck Character	V	X	D	3
Resulting Code	JOHNSV	JOHNSX	JOHNSD	JOHNS3

MAINT

Recursive Decomposition Coding

This method uses a frequency ordering of letters, and selection or rejection of a particular letter is based on that letter's relative order in the table with respect to the previous letter. It thus gives a statistical advantage, not an absolute one, to the lower frequency letters, since many words differ only in high frequency vowels (e.g., COMPUTE, COMPETE, COMPOTE). The relative order feature adds a randomizing aspect to selection that permits inclusion of occasional high frequency letters.

The frequency ordering used is taken from tables in Pratt(1). Different word samples will yield slightly different orderings, but the cipher resolution is not sensitive to minor orderings. The Pratt ordering is:

ETAONRISHDLFCMUGYPWBVKXJQZ

Algorithm

The algorithm is: "If a source word is longer than six letters, select the first letter and subsequent letters of lesser or equal ordering than the prior letter, and continue the process recursively until six letters remain. Words of six letters or less are reproduced in full and filled out with null symbols, where necessary, until a total of six characters is reached."(4)

Several examples will illustrate the system. Omitted letters are shown bracketed, and successive cycles are shown by arrows.

1. B[I]B[LIO]G[RA]P[H]ER—▷BBGPER
2. I[N]F[O]RM[AT]I[O]N—▶IFRMIN
3. SH[A]K[E]SP[E]AR[E]—▶SHK[S]PAR—▷SHKPAR
4. SMITH—▷SMITH □
5. K[IN]G[S]F[O]RD[-S]M[IT]H—▶K[G]FRDMH—▷
   KFRDMH
6. K[R]ISH[NA]M[O]OR[T]H[I]—▶K[I]SHM[O]RH—▶
   KSHMRH

In some very rare cases, an emerging cipher may have more than six letters in descending sequence, so that it will not decompose further. In such cases the final letters are eliminated until six remain.

Most words, however, will reduce in one or two cycles. In a test of 55,000 words only one was found requiring four cycles. A few extreme cases do exist, however: the longest ever found required six cycles:

7. AN[T]ID[I]S[E]S[T]AB[LI]SHM[E]N[T]ARI[A]NISM—▶
   ANID[S]S[A]B[S]HM[NA]RI[N]ISM—▶
   ANID[S]B[H]M[R]IISM—▶
   ANIDB[MI]ISM—▶
   ANIDB[I]SM—▶
   ANIDB[S]M—▶
   ANIDBM

Only slightly shorter, the longest word in Shakespeare's works (*Love's Labour's Lost* V.i) reduces in three recursions:

8. H[O]N[O]RIF[I]C[A]B[I]L[IT]U[DIN]I[T]A[T]IB[US]→
   H[N]RIFCB[L]U[IA]IB→
   H[R]IFCB[UI]B→
   HIFCBB

Even Mary Poppins' sesquipedalian ecphonesis crumbles to six letters in three recursions:

9. SUP[E]RC[A]L[I]F[RA]G[I]L[I]S[T]IC[E]X[PIA]L[I]
   D[O]C[O]U[S]→
   SUPRC[L]FG[LSI]CX[LD]CU→
   SUP[CF]G[C]X[C]U→
   SUPGXU

The prime advantages of the method are its computational simplicity and its resolution. The elimination requires only table lookup and no multiplications; and the compression is readily done manually. The resolution is apparently as good as one can get with a selected letter compression code. It effectively flattens the high portions of the letter frequency curve, though unlike a randomizing code it cannot totally equalize the distribution. The resolution, however, is quite good. Specifically in a test of 4862 words (chosen from the secretary's handbook *20,000 Words*), only thirty of the six-letter ciphers (about 0.61%) were non-unique and of the non-unique ciphers all were simple pairs except for one instance of three occurrences. The method compresses quickly: since all non-initial letters have a .5 probability of being retained, the expected length, *L*, of an n letter word after r recursions is:

$$L = 1 + \frac{n-1}{2^r}$$

This indicates that a 43-letter word may be expected to compress to six letters in three recursions.

THE SOUNDEX CODE

The widely used Soundex code(5), has been attributed to Remington Rand. It is a phonetic code that tends to create identical codes from similar sounding names. It is useful for name searching under conditions of uncertainty of spelling, such as occurs in the airline reservation problem where it is often required to match a telephoned name in a machine file. The code has five steps:

1. Retain first letter of name as first letter of code.
2. Eliminate vowels, W, H, and Y.
3. Eliminate the second consonant of a double consonant pair.
4. Replace the following letters by numbers:

B,P,F,V,	1
C,G,J,K,Q,S,X,Z,SC,CH,SCH,CK	2
D,T	3
L	4

M,N	5
R	6

5. Take the first three or four symbols, and add zeros if insufficient phonetic sounds.

   The example below illustrates the process:

   JOHNSEN —> JNSN —> J525 —> J52
   JOHNSON —> JNSN —> J525 —> J52
   JOHNSTON —> JNSTN —> J5235 —> J52
   JOHNSTONE —> JNSTN —> J5235 —> J52

CONCLUSION

Historically, compression techniques for word coding have been designed for both encoding and use by humans. Here described are some codes requiring computers for practical encoding usable by humans. As files grow larger and directory code generation becomes more demanding, it is likely that alphanumeric concessions to human readers will be eliminated in favor of more efficient use of the code space. The codes presented here, however, appear quite useful for many present applications in information retrieval.

ACKNOWLEDGMENT

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AUTHORITY VERIFICATION

Correction and standardization of
subject headings and author names

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I. INTRODUCTION

There are two forms of editing: (1) analyzing all the items in a record against one another for validity and consistency; and (2) comparing all the records in a file to each other for uniformity and standardized terminology. This second form of editing is most frequently termed authority verification, in the sense that personal or corporate names and subject headings are compared to an "authority file" so that variant forms may be reduced (or corrected) to a single authorized version of the name or heading. For machine based files this is an even more acute problem, because computers are notoriously literal and frequently lack the means to associate variant forms of the same heading or name.

Although verification of authors and subjects can be performed on an entry-by-entry basis (as it is to some extent in the course of file maintenance), the major authority verification is performed as a file processing operation. The efficiency of this is clear: supplying a date for a chronological subject heading subdivision can be done once and then be applied to all the entries in which the heading appears. The benefits of the editing effort are distributed across all the entries in which the heading is used.

Thus the major technique applied in the verification system is to construct consolidated records which combine all the occurrences of a given name/term. These consolidated records are similar to a union list, in the sense that all the entries which utilize the name/term are indicated in the union record (by BRIDNO). It should be noted that author verification applies to added entry tracings as well as to main entries, so that the author file will be quite extensive.

The following table is a schematic of two name authority union records. Each record contains the full author name, plus a string of BRIDNOs representing each occurrence of the name. In addition the type of occurrence (main or added) is given.

NAME	BRIDNOs	LC	TYPE
Love, Robert Merton 1909-	005	N	Main
	007	N	Added
	025	N	Added
	037	N	Main
	045	N	Main
Love, Robertus 1867-1930	003	N	Added
	021	Y	Added
	905	Y	Main
	052	N	Added

The union record also contains a LC/non-LC flag (if any of the BRIDNOs represent L.C. catalog records), and also a sequential author verification record ID number (AVRIDNO).

The union records are displayed in the following summary fashion:

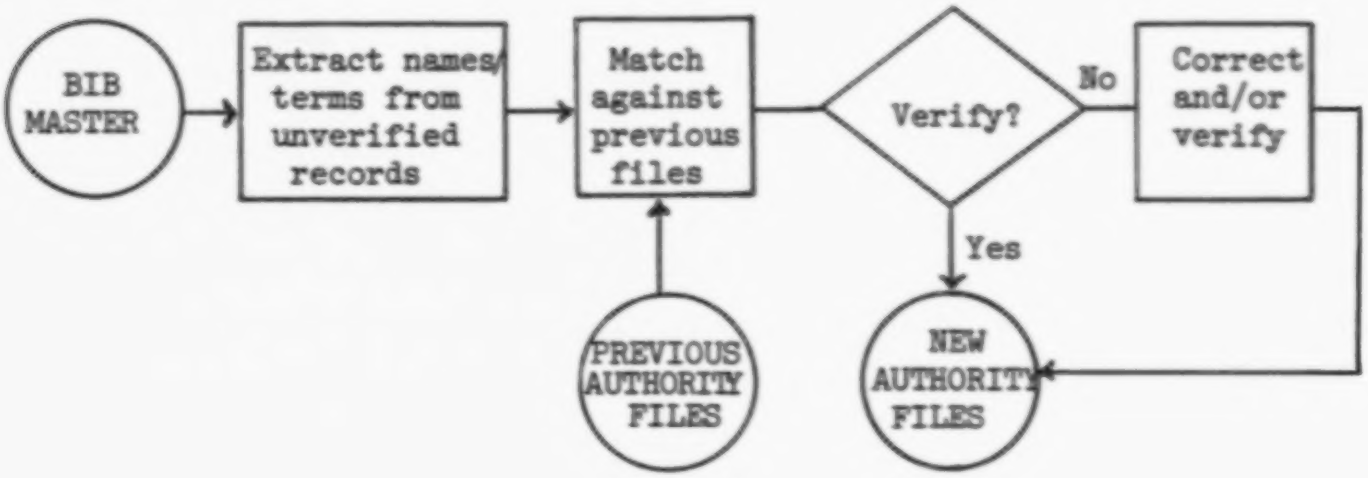
LISTING

SEQ. NO.	NAME	L.C.	NO. MAIN	NO. ADDED
10420	Love, Robert Merton, 1909-	N	3	2
10421	Love, Robertus, 1867-1930	Y	1	3

Corrections are posted to a single record, identified by SEQ. ED. number; the correction will ultimately be applied to all the entries represented by their BRIDNOs in the union record.

If required, a list of the BRIDNOs of any union record can be printed out in addition to the summary listing, although this would not be produced except by request. Similarly to facilitate editorial verification, short title could be carried with each BRIDNO in the union record, even though this would lengthen the union record size. Then for difficult cases, editors could request Title Lists to establish a context for the author names.

The authority files build with each verification cycle and are reusable during each succeeding cycle. This is shown schematically in the following diagram:


BIB MASTER
Extract names/ terms from unverified records
Match against previous files
Verify?
No
Correct and/or verify
Yes
PREVIOUS AUTHORITY FILES
NEW AUTHORITY FILES

Each verification cycle includes the files built during all the preceding cycles. These previously verified files constitute a dictionary of standard forms, in much the same way that successive editions of L.C.'s Subject Headings provide a body of standard subject references. The net effect of this is to reduce the amount of editing to be performed during subsequent verification cycles.

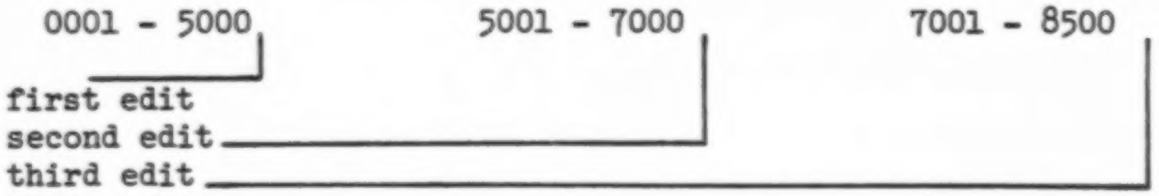
It can be seen from the above that the entire file need not be verified, except for the first time. The BRIDNO series covered by any authority edit is discrete and need not be repeated.

BRIDNOs IN EACH VERIFICATION CYCLE

0001 - 5000	5001 - 7000	7001 - 8500	etc.
first edit	second edit	third edit	

From the point of view of the growing inclusiveness of the authority file, however, the BRIDNOs whose names/terms are verified is an overlapping series:

BRIDNOs VERIFIED BY AUTHORITY FILE



Thus the ongoing requirements of authority editing decrease rather radically. In this way authority editing can be seen to bear a strong resemblance to the time phases of conversion, moving from large scale retrospective application to a steady-state ongoing operation.

The context of verification has for the most part been the establishment of invariant forms of names or terms. An equally important function is to verify the presence of a date or dates in period subdivisions of subject tracings. This is an important form of editing, because it will be used by the system filing program (see chapter FILE) to arrange such subdivisions into chronological rather than alphabetic order in the output book catalog. Simple examples are:

HEADING AND SUBDIVISION	DATE REQUIRED?
U.S.--HISTORY--CIVIL WAR	YES
U.S.--HISTORY--REVOLUTIONARY WAR	YES
U.S.--HISTORY--WAR OF 1812	NO
U.S.--HISTORY--WORLD WAR I	YES

The system Filing Rule program requires the presence of a date on which to sort. The authority edit program will flag all such subdivisions which require a date. After the dates are supplied the entries will be re-arranged in the printed book catalog:

BOOK CATALOG CHRONOLOGICAL ORDER

U.S.--HISTORY--REVOLUTIONARY WAR (1776-1780)
U.S.--HISTORY--WAR OF 1812
U.S.--HISTORY--CIVIL WAR (1860-1865)
U.S.--HISTORY--WORLD WAR I (1914-1918)

The dates for the above have been entered via the subject authority verification cycle.

Additional use for authority editing is to partition the output files by network library. These individual files would be developed after editing has been done on a system-wide basis, to avoid redundant effort. At that point, it would be useful for individual libraries to retrieve and print out their own files. This would be especially true for subject files. A single library's subject file could be run through that part of the system which would yield outputs in the form of "see" and "see also" reference records. These records could be printed on 3 x 5 cards to give a complete subject authority cross reference file in card form.

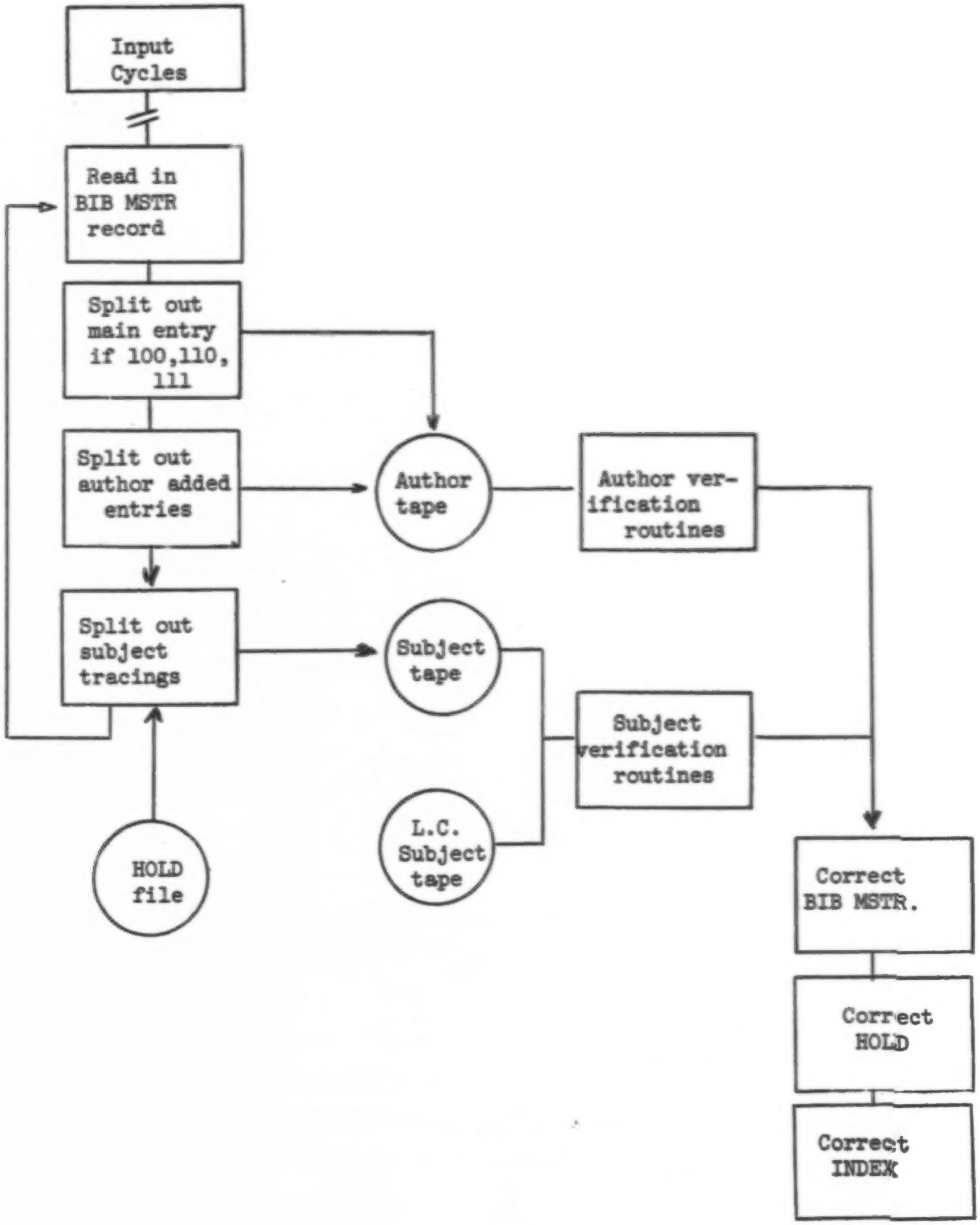
The computer tape file of L.C. Subject Headings, now available from the Card Division, will be utilized to assist in the verification of subject headings, the conversion of deleted headings to their new form (e.g. "Moslem" to "Islam"), and the generation of appropriate "see" and "see also" reference records to be incorporated in the Subject Catalog. A schematic of the overall procedure is given in VER Fig. 1 on the following page.

II. AUTHOR VERIFICATION: LOGIC AND SUBROUTINES

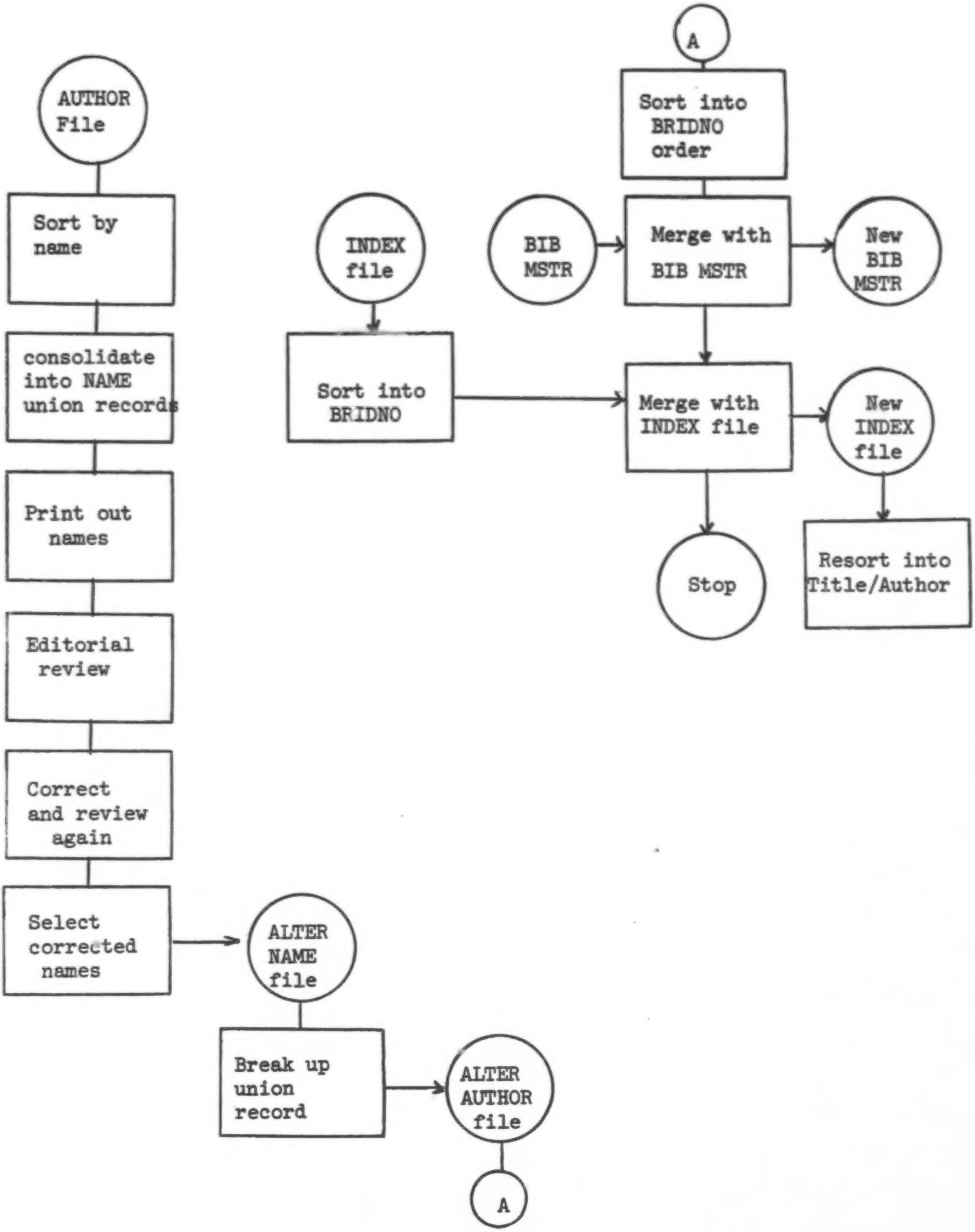
The main purposes of verifying the author entries (both main and added) in the master file, is to achieve a maximum of uniformity in the representation of the name of corporate and personal authors. This uniformity is important to the integrity of the file because it will guarantee that all the works of an author will appear in one place in the book catalog, and further that "see" references will exist for pseudonyms, name changes, etc. The process of author verification is optional in the sense that the book catalog can be produced from an unverified file. However, the verification system does provide the last point at which the user can exercise deliberate control over the content of the file.

The basic flow of the author verification system consists of printing out all the author references, reviewing the print out, correcting erroneous name forms, entering "see" references, and posting corrections to the master file records. In order to implement this basic flow, the following program steps/subroutines are required. A schematic of the author verification flow is given in VER Fig. 2.

VER Fig. 1: GENERAL FLOW


Input Cycles
Read in BIB MSTR record
Split out main entry if 100,110, 111
Split out author added entries
Split out subject tracings
HOLD file
Author tape
Subject tape
L.C. Subject tape
Author verification routines
Subject verification routines
Correct BIB MSTR.
Correct HOLD
Correct INDEX

VER Fig. 2: FLOW OF AUTHOR VERIFICATION


A
Sort into BRIDNO order
AUTHOR File
Sort by name
INDEX file
BIB MSTR
Merge with BIB MSTR
New BIB MSTR
consolidate into NAME union records
Sort into BRIDNO
Merge with INDEX file
New INDEX file
Print out names
Stop
Resort into Title/Author
Editorial review
Correct and review again
Select corrected names
ALTER NAME file
Break up union record
ALTER AUTHOR file
A

Summary Descriptions of Subroutines - Author Verification

AUT 1. Create separate record for each author main entry (MARC tags 100, 110, 111) and author tracings (tags 700, 710, 711, 600, 610, 611) in each master file record. Include the following data elements in each record: Bibliographic Record ID number (BRIDNO), MARC tag, Indicators 1 and 2, and name data delimited by $a, $b, $c, $d. The name of this file is AUTHOR.

AUT 2. Sort AUTHOR file by author name and indicators 1, 2.

AUT 3. Create single machine record for each unique author name. Data elements in this record are: assigned author sequence number, Indicators 1 and 2, name data delimited by $a, $b, $c, $d, and MARC tag, and BRIDNO for each occurrence of the name. The name of the file is NAME.

AUT 4. Generate listing of NAME file, listing author sequence number, Indicators, name data (including delimiters), count of main entries and count of tracings in which this name appears.

AUT 5. Review listing. This step is performed by editors/librarians. Corrections to the listing are prepared. Corrections will contain author sequence number, correction operator (add, delete, replace), data location signals, and correction material. The name of this file is FIX NAME.

AUT 6. Sort FIX NAME by author sequence number.

AUT 7. Merge FIX NAME file with NAME file. Where NAME and FIX NAME record have the same author sequence number, update the NAME record with data in FIX NAME record and create a new corrected NAME record. Where NAME record does not match FIX NAME record on author sequence number, copy NAME record directly onto new NAME file.

AUT 8. Generate listing of corrected portion of NAME file, as in subroutine AUT 4.

AUT 9. Review listing. Correct as necessary, as described in routines AUT 5 through AUT 7. When this correction cycle is complete, continue to AUT 10.

AUT 10. Select from NAME file only those records which have been corrected by one or more FIX NAME records. The name of the subfile is ALTER NAME.

AUT 11. Create separate machine records for each BRIDNO data element in each ALTER NAME record. Data elements in this record are: Bibliographic Record ID number (BRIDNO), author name (indicators and delimiters \$a through \$d), MARC tag. The name of this file is ALTER AUTHOR.

AUT 12. Sort ALTER AUTHOR file into BRIDNO-MARC tag sequence.

AUT 13. Merge ALTER AUTHOR file with BIB MASTER file. Where BRIDNO's match, search for appropriate MARC tag and replace indicators 1 and 2 and data between delimiters \$a through \$d in BIB MASTER with indicators and data from ALTER AUTHOR record. Copy updated BIB MASTER onto new BIB MASTER file. Where BRIDNO's do not match, copy BIB MASTER record directly onto new BIB MASTER file.

AUT 14. Sort INDEX file into BRIDNO sequence.

AUT 15. Merge ALTER AUTHOR file with INDEX file. Post corrections where MARC tag in ALTER AUTHOR equals 100, 110, 111 and BRIDNO matches BRIDNO in INDEX file. Corrections may be change name form or delete record.

AUT 16. Resort INDEX into Title/Author order.

III. SUBJECT VERIFICATION: LOGIC AND SUBROUTINES

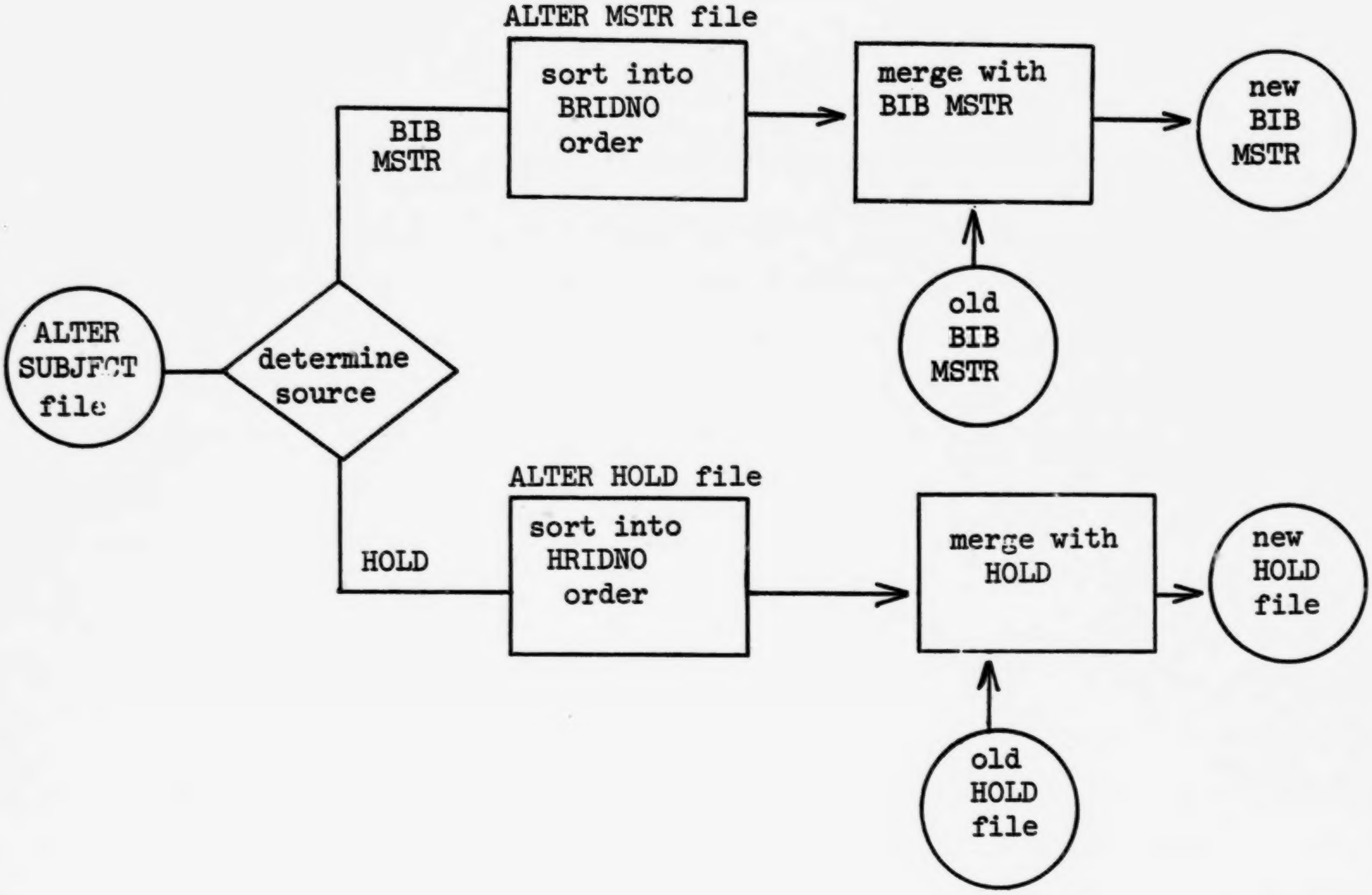
The editing of subject headings used in the file serves three basic purposes: normalize all variant heading forms to the same version (e.g. "Hist." to "History" etc); modify all superceded headings by substituting a new heading for no longer accepted usage (e.g. substituting "Islam" for "Moslem"); generate appropriate "see" and "see also" references relative to subject headings in the corrected authority list. For this last purpose the tape file of LC Subject Headings will be used for determining proper "see" and "see also" references.

The basic logic of subject verification has two distinct stages, and the second stage is divided into two separate parts, as shown below:

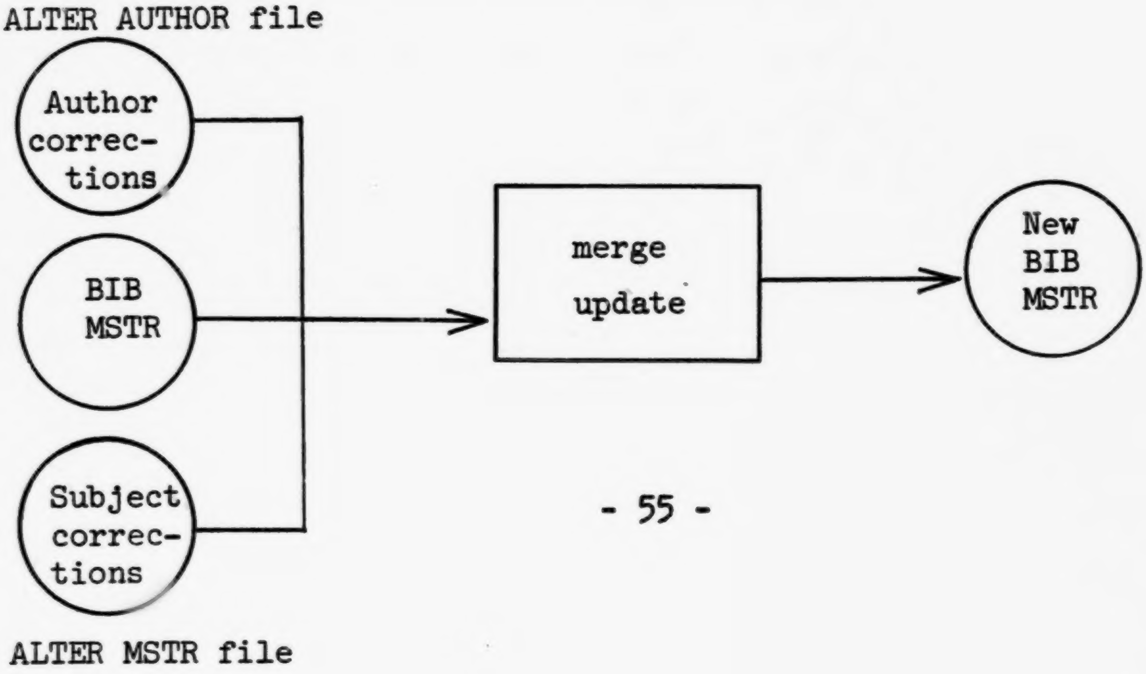
STAGE 1	STAGE 2	
Create correct subject term file	Part 1	Correct subject terms in BIBMSTR and HOLD files
	Part 2	Produce cross reference file

The purpose of the first stage, in any event, is to create a correct file of subject terms. This is accomplished in almost the same manner as the creation of a verified author authority file, except that the tape file of LC Subject Headings is used to help in the establishment of standard forms of a heading.

Part one of the second stage is concerned with posting subject term corrections to the master file records. Since this involves updating the master file, the operation is performed concurrently with posting author corrections to the master file. The following schematic illustrates the procedure:


ALTER MSTR file
sort into BRIDNO order
merge with BIB MSTR
new BIB MSTR
BIB MSTR
old BIB MSTR
ALTER SUBJECT file
determine source
ALTER HOLD file
HOLD
sort into HRIDNO order
merge with HOLD
new HOLD file
old HOLD file

First, only subject tracings whose form has been corrected are selected. Then the origin of the tracing is found: BIB MSTR or HOLD. Separate files are created for each source. The BIB MSTR corrections are sorted into BRIDNO order and merge-updated with the BIB MSTR file. HOLD corrections are sorted into Hold Record ID number (HRIDNO) order and merge-updated to the HOLD file. It should be noted that the subject update of the BIB MSTR should occur simultaneously with the author correction of that file, to minimize master file processing:


ALTER AUTHOR file
Author corrections
BIB MSTR
Subject corrections
ALTER MSTR file
merge update
New BIB MSTR

Part two of the second stage is designed to produce a complete machine file of "see" and "see also" references to be interfiled (sorted) into the subject portion of the final book catalog. (This file may also be printed on 3 x 5 cards for refiling into the existing card catalog). Two input files are involved in this procedure: a corrected subject term file, and the machine file of LC Subject Headings. This second file contains approximately 95,000 subject headings in use in the Dictionary Catalog of the Library of Congress. Each heading contains a full set of "see also", "see", "see from", and "see also from" references.

In order to construct a file of headings with appropriate "see also" and "see" references, it is necessary to select the heading from the LC tape and then to delete all "see also" references which would lead to headings which are in the LC list but not in the corrected subject term file. To develop appropriate "see" references, it is necessary to pick up all the "see from" tracings from the LC list heading, and from these construct "see" headings in the normal LC format.

In order to implement the logical flow of the subject verification subsystem, the program steps/subroutines summarized in the following section are required. A schematic for stage 1 of the verification is given in VER Fig. 3.

SUMMARY DESCRIPTION OF SUBROUTINES - SUBJECT VERIFICATION

STAGE 1: CREATE CORRECT SUBJECT TERM FILE

SUB 1. Create separate record for each subject tracing (MARC tags 600-690), using BIB MSTR and HOLD File as input data. Include the following data elements: Bibliographic record ID number (BRIDNO), Holdings record ID number (HRIDNO), MARC Tag, MARC delimiters, subject term data, and record source flag (0=BIB MSTR, 1=HOLD). The name of this file is SUBJECTS.

SUB 2. Sort SUBJECTS file by subject term and MARC tag.

SUB 3. Create single machine record for each unique subject term, by combining records with the same subject terms. Data elements in the record are: assigned subject term ID number (sequential), MARC tag, MARC delimiters, subject term data; and for each occurrence of the term: record source flag, BRIDNO, HRIDNO. The name of this file is TERM.

SUB 4. Generate listing of TERM file, displaying subject term ID number, subject term (with delimiters), MARC tag, and number of times the term is used in the SUBJECTS file.

SUB 5. Review listing. This step is performed by editor/librarians. Corrections to the listing are prepared. Corrections will contain subject term ID number (STRIDNO), correction operator (add, delete, replace), data location signals, and correction material. The name of this file is FIX TERM.

SUB 6. Sort FIX TERM by subject term ID number.

SUB 7. Merge FIX TERM file with TERM file. Where TERM and FIX TERM record have the same STRIDNO, update the TERM record with data in the FIX TERM record to create a new corrected TERM record. Where TERM record does not match FIX TERM record on STRIDNO, copy TERM record directly onto new TERM file.

SUB 8. Generate listing of corrected portion of TERM file, as in subroutine SUB 4.

SUB 9. Review Listing. Correct as necessary, as described in routines SUB 5 through SUB 7. When the correction cycle is completed, continue to SUB 10.

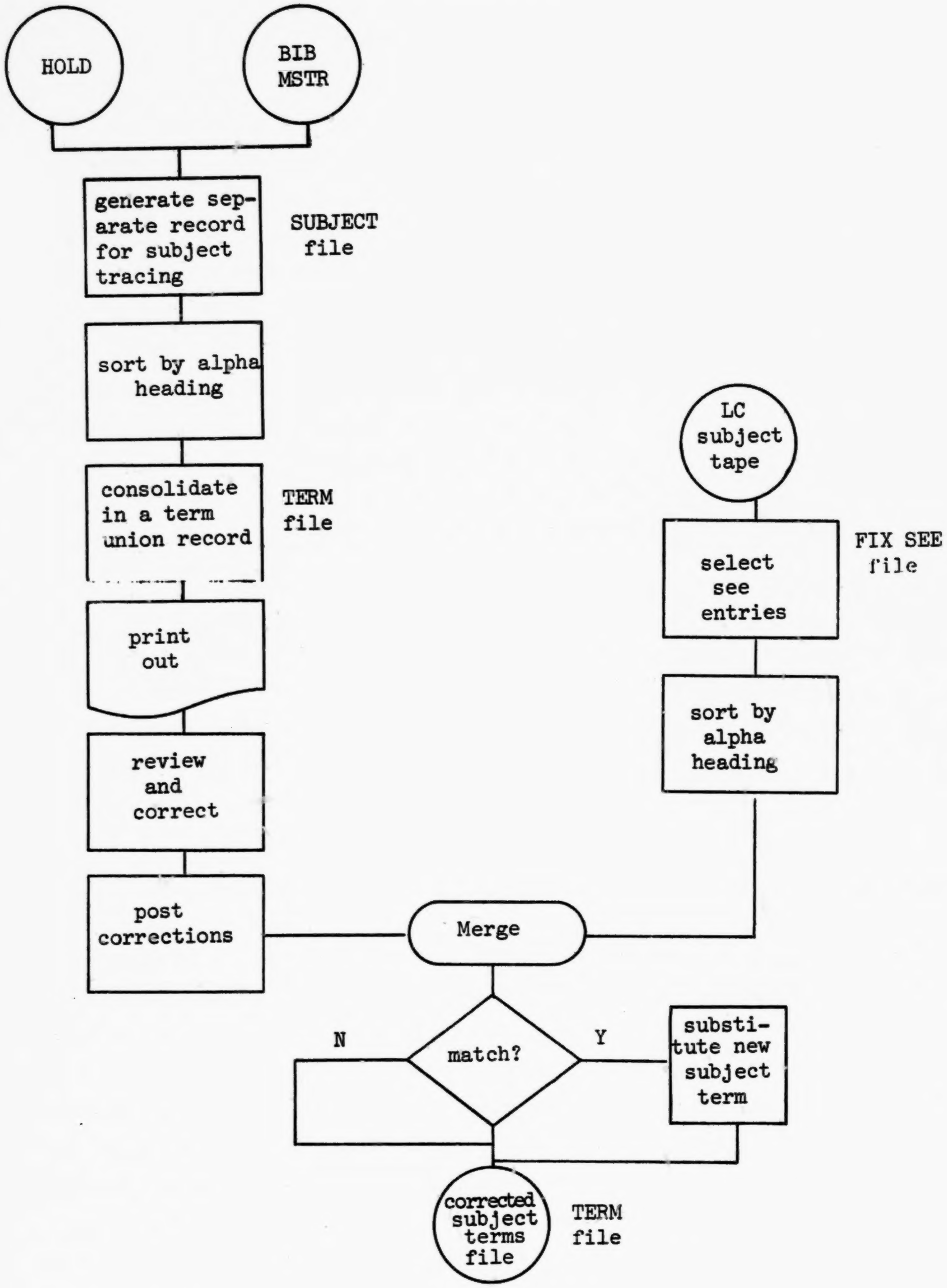
SUB 10. Select all see references from LC Subject Headings tape. The name of this file is FIX SEE.

SUB 11. Sort FIX SEE into straight alphabetic order.

SUB 12. Match (merge) FIX SEE file with TERM file on subject term heading. If there is a match (which means that a heading in TERMS has been superceded and replaced by a more current heading), then the heading in TERMS should be replaced by the referent of the "see" heading and the altered record written into a new TERM file. If there is more than one reference (e.g. Textiles see Cloth, Weaving) then the substitution should not be made, since it is impossible to determine which referent to select without examining the master file catalog records involved. If no match between a FIX SEE and a TERM record occurs, then copy the TERM record into the new TERM file.

END OF STAGE I: SUBJECT VERIFICATION

VER Fig. 3: SUBJECT TERM CORRECTION


HOLD
BIB MSTR
generate separate record for subject tracing
SUBJECT file
sort by alpha heading
consolidate in a term union record
TERM file
print out
review and correct
post corrections
LC subject tape
select see entries
FIX SEE file
sort by alpha heading
Merge
match?
N
Y
substitute new subject term
corrected subject terms file
TERM file

STAGE 2, PART 1: CORRECT SUBJECT TERMS IN BIB MSTR AND HOLD FILES

SUB 13. Select from TERM file only those records which have been corrected or charged (as a result of merge with FIX SEE file). The name of this subfile is ALTER TERM.

SUB 14. Create ALTER SUBJECT records for each BRIDNO data element in each ALTER TERM record. Data elements in this record are: BRIDNO, subject term (including delimiters), MARC tag, HRIDNO.

SUB 15. Separate ALTER SUBJECT file into two subfiles, depending on the origin of the records. One subfile (named ALTER MSTR) for records derived from the BIB MSTR file. The other subfile (named ALTER HOLD) for records derived from the HOLD file.

SUB 16. Sort ALTER MSTR into BRIDNO - MARC tag sequence.

SUB 17. Merge ALTER MSTR file with BIB MASTER file. (see subroutine AUT 13). Update subject tracings in Bibliographic Master File.

SUB 18. Sort ALTER HOLD file into HRIDNO order.

SUB 19. Merge ALTER HOLD file with HOLD file. When records from both files match on HRIDNO, update the subject headings in the HOLD file record, and write it onto the new HOLD file. If no match, then copy HOLD record onto new HOLD file.

END OF STAGE 2, PART 1

STAGE 2, PART 2: PRODUCE CROSS REFERENCE FILE (See SUBJ Fig. 4)

SUB 20. Sort LC file into straight alphabetic order.

SUB 21. Merge LC file and TERM file (see SUB 12). Select records from LC file which match subject headings of records on TERM file. Call this file LC TERMS.

SUB 22. Generate an LC form of see headings using see from reference data element in LC TERMS record. Transform the see from referent into the main heading, and the main heading into the referent. (For example, if the heading "Weaving" has a see from reference "Textiles", then the generated record would be of the form "Textiles, see Weaving".) The name of this file is SEE.

SUB 23. Generate separate record for each "see also" reference in LC TERMS. Call this file SEE ALSO.

SUB 24. Sort SEE by its main heading.

SUB 25. Consolidate SEE file by eliminating duplicate records and grouping together all see references which fall under the same main heading. This consolidated SEE file is the final set of see references.

SUB 26. Sort SEE ALSO file by see also reference term.

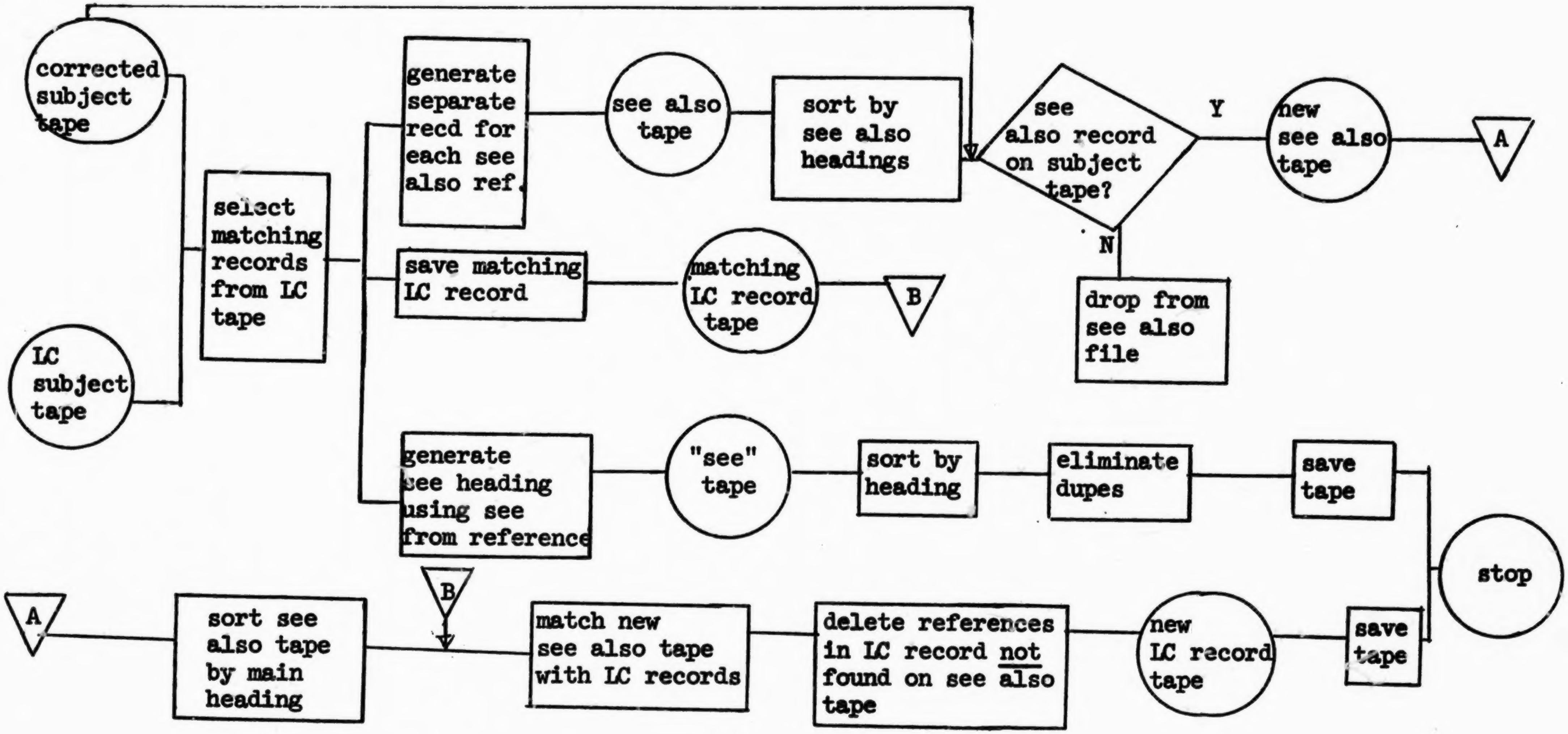
SUB 27. Merge SEE ALSO with TERM file. If a record from the SEE ALSO file does not have a corresponding record in the TERM file, then delete the SEE ALSO record from the file. Save only those SEE ALSO records which match some record on the TERM file. The name of this subfile is SEE ALSO TERMS.

SUB 28. Sort SEE ALSO TERMS by main heading term and see also reference term.

SUB 29. Merge SEE ALSO TERMS file with LC TERMS file. In each LC TERMS record delete any see also reference data elements which are not found in SEE ALSO TERMS file. This will eliminate blind cross references to heading terms not in the TERM file. Copy modified record onto new LC TERMS tape. This is the final see also reference tape.

END OF STAGE 2, PART 2

VER Fig. 4: PROCEDURE FOR CROSS-REFERENCES


corrected subject tape
LC subject tape
select matching records from LC tape
generate separate recd for each see also ref.
see also tape
sort by see also headings
see also record on subject tape?
Y
N
new see also tape
A
drop from see also file
save matching LC record
matching LC record tape
B
generate see heading using see from reference
"see" tape
sort by heading
eliminate dupes
save tape
stop
A
sort see also tape by main heading
B
match new see also tape with LC records
delete references in LC record not found on see also tape
new LC record tape
save tape

IV: FILE SPECIFICATIONS

(Tables 1-17)

FILE SPECIFICATIONS NO. 1

TITLE : ALTER AUTHOR

CREATED BY : AUT 11

INPUT SOURCE : ALTER NAME

USED BY : AUT 12, AUT 13

PURPOSE : To provide separate sortable records for each author main and added entry which has been corrected. These files will be used to correct the BIB MSTR file.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim
1	BIB MSTR rcd ID number	BRIDNO	ALTER NAME	BRIDNO	F	7	N			
2	MARC tag	MTAG	ALTER NAME	MTAG	F	3	N			
3	Author Name	AU NAME	ALTER NAME	AU NAME	V		N	(See	AUTHOR	file)

FILE SPECIFICATION NO. 2

TITLE : ALTER HOLD

CREATED BY : SUB 15

INPUT SOURCE : ALTER SUBJECT

USED BY : SUB 18, 19

PURPOSE : To separate out those ALTER SUBJECT records whose file source flag = 1. See ALTER SUBJECT specification.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim

FILE SPECIFICATIONS NO.3

TITLE : ALTER NAME

CREATED BY : AUT 10

INPUT SOURCE : NAME

USED BY : AUT 11

PURPOSE : This is a subfile of the NAME file, based on the value of NFIX (Update indicator) greater than zero. See NAME Specifications.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim

FILE SPECIFICATION NO. 4

TITLE : ALTER MSTR

CREATED BY : SUB 15

INPUT SOURCE : ALTER SUBJECT

USED BY : SUB 16, 17

PURPOSE : To separate out those ALTER SUBJECT records whose file source flag = 0. See ALTER SUBJECT specification.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim

FILE SPECIFICATION NO. 5

TITLE : ALTER SUBJECT

CREATED BY : SUB 14　　INPUT SOURCE : ALTER TERM

USED BY : SUB 15

PURPOSE : To recreate separate sortable records from single consolidated term record. Each string of MARCtag, Subject Record ID and file source flag, is mapped into a single ALTER SUBJECT record.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim
1	Record ID No.	SRIDNO	ALT TERM	SRIDNO	F	7	N			
2	MARC Tag	MTAG	"	MTAG	F	3	N			
3	File Source	SFLAG	"	SFLAG	F	1	N			

FILE SPECIFICATION NO. 6

TITLE : ALTER TERM

CREATED BY : SUB 13

INPUT SOURCE : TERM FILE

USED BY : SUB 14

PURPOSE : This is a subfile of all terms which have been corrected. See TERM file specifications.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim

FILE SPECIFICATIONS NO. 7

TITLE : AUTHOR

CREATED BY : AUT 1

INPUT SOURCE : BIB MSTR file

USED BY : AUT 2, AUT 3

PURPOSE : To provide a single sortable record for each author main and added entry contained in a BIB MSTR file record.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim
1	BIB MSTR record ID number	BRIDNO	BIB MSTR	BRIDNO	F	7	N			
2	MARC tag	MTAG	BIB MSTR	MTAG	F	3	N			
3	Author Name	AU NAME	BIB MSTR	---	V		N	100 110 111 600 610 611 700 710 711	1 1 1 1 1 1 1 1 1	abcd ab abcd abcd ab abcd ab abcd ab

FILE SPECIFICATIONS NO. 8

TITLE : FIX NAME

CREATED BY : AUT 5

INPUT SOURCE : Card input

USED BY : AUT 6, AUT 7

PURPOSE : This is a correction file, designed to contain updating material to the NAME file. The source of the data is punched card.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim
1	NAME sequence number	NRIDNO	card		F	7	N			
2	Update operator	OPER	card		F	2	N			
3	Data Location	LOCN	card		V		N			
4	Correction data	CORR	card		V		N			

FILE SPECIFICATION NO.9

TITLE : FIX SEE

CREATED BY : SUB 10

INPUT SOURCE : L.C. TERMS

USED BY : SUB 11, 12

PURPOSE : This is a subfile consisting of all subject headings which have a "see" reference in the L.C. file.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim
	See Appendix									

FILE SPECIFICATION NO. 10

TITLE : FIX TERM

CREATED BY : SUB 5

INPUT SOURCE : Card input

USED BY : SUB 6, 7

PURPOSE : This is a correction file, designed to contain updating material to the TERM file.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim
1	TERM sequence number	TRIDNO	card		F	7	N			
2	Update operator	OPER	"		F	2	N			
3	Data Location	LOCN	"		V		N			
4	Correction Data	CORR	"		V		N			

FILE SPECIFICATION NO. 11

TITLE : LC TERMS

CREATED BY :

INPUT SOURCE : Library of Congress

USED BY : SUB 10, 20, 21

PURPOSE : This is a file of LC generated records which match the records in TERMS.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim

FILE SPECIFICATIONS NO. 12

TITLE : NAME

CREATED BY : AUT 3

INPUT SOURCE : AUTHOR file

USED BY : AUT 4, AUT 7, AUT 8, AUT 10

PURPOSE : To provide a consolidated record for each author name used in the BIB MSTR file. NAME record will carry a string of repeatable data elements (fields 4 and 5) to indicate which BIB MSTR records contain author name ; and under what MARC tag the name is coded.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim
1	Name sequence number	NRIDNO	computed		F	7	N			
2	Author name	AU NAME	AUTHOR	AU NAME	V		N	(See	AUTHOR	file)
3	Count of AUTHOR records with AUTHOR name i	NCOUNT	computed		F	4	N			
4	Update status	NFIX	computed		F	1	N			
5	MARC tag	MTAG	AUTHOR	MTAG	F	3	Y			
6	BIB MSTR record ID number	BRIDNO	AUTHOR	BRIDNO	F	7	Y			

FILE SPECIFICATION NO. 13

TITLE : SEE

CREATED BY : SUB 22

USED BY : SUB 24

INPUT SOURCE : LC TERMS File

PURPOSE : To provide a file of see references (synonymous terms) for all subject headings in TERM file. See Appendix and SUB 22.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim

FILE SPECIFICATION NO. 14

TITLE : SEE ALSO

CREATED BY : SUB 23

INPUT SOURCE : LC TERMS

USED BY : SUB 26, 27, 28

PURPOSE : A separate record for each "see also" reference in LC TERMS. The object is to eliminate blind references. Specifications as in Appendix.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim

FILE SPECIFICATION NO. 15

TITLE : SEE ALSO TERMS

CREATED BY : SUB 27

INPUT SOURCE : SEE ALSO

USED BY : SUB 28, 29

PURPOSE : This is a subfile of SEE ALSO, containing only those "see also" references which are also subject headings in the LC TERMS file. See Appendix.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim

FILE SPECIFICATION NO. 16

TITLE : SUBJECTS

CREATED BY : SUB 1

USED BY : SUB 2

INPUT SOURCE : BIB MSTR, HOLD

PURPOSE : To provide a single sortable record for each subject tracing in each BIB MSTR and HOLD record.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim
1	Subject IDNO	SRIDNO	BIB MSTR HOLD	BRIDNO HRIDNO	F	7	N			
2	Source Flag	SFLAG	Computed:	0 = MSTR 1 = HOLD	F	1	N			
3	MARC Tag	MTAG	BIB MSTR HOLD		F	3	N			
4	Subject Heading	SHEAD	BIB MSTR HOLD					650 651 622	all " "	all " "

FILE SPECIFICATION NO.17

TITLE : TERM

CREATED BY : SUB 3

INPUT SOURCE : SUBJECTS file

USED BY : SUB 4, 7, 8, 12

PURPOSE : To provide a consolidated record for each subject heading used in BIB MSTR or HOLD files. TERM will carry a string of repeatable data elements to indicate which HOLD/BIB MSTR records contain the subject term.

DATA ELEMENTS

FIELD NUMBER	NAME OF FIELD	MNEMONIC	SOURCE		TYPE	SIZE	REPEATABLE	MARC		
			File	Field				Tag	Ind	Delim
1	Term Sequence No.	TRIDNO	computed		F	7	N			
2	Subject Term	STERM	SUBJECTS	SHEAD	V		N			
3	Count of No. of SUBJECTS rcds with Term i	TCOUNT	computed		F	4	N			
4	Update Status	TFIX	computed		F	3	Y			
5	MARC Tag	MTAG	SUBJECTS	MTAG	F	3	Y			
6	Subject Record ID	SRIDNO	SUBJECTS	SRIDNO	F	7	Y			
7	Subject file source	SFLAG	SUBJECTS	SFLAG	F	1	Y			

APPENDIX:

MARC II format magnetic tape file of the 7th edition of: Subject Headings Used in the Dictionary Catalogs of the Library of Congress.

1. INTRODUCTION

The 7th edition of Subject Headings Used in the Dictionary Catalogs of the Library of Congress was printed in 1966 by the G.P.O. The method of printing used by the G.P.O. allowed the entire 7th edition to be stored on magnetic tape in machine readable form. In late 1967, 18 months of supplement data (July 64 through December 65) were merged into the 7th edition tape, to produce a file which is up to date through December 1965,

The typographic format of the G.P.O. file had two drawbacks for library systems. First, there were a large number of case shift and font control codes embedded in the data, which made the text unwieldy and awkward to process for other than typographic applications. Second, and more serious, was the loose record structure of the file, in which every line of print in the 7th edition was a separate record in the machine file. Each record (i.e. line of print) had a separate control number, and had to be filed individually. Nowhere was the general structure of a Subject Heading entry reflected, since there was no unification of a heading or sub-heading with all its component parts (class numbers, scope notes, sa's, x's, xx's) into a single logical record.

The major goals of the conversion then were (a) to strip out all case and font control codes, (b) to unify a Subject Heading entry and all its components into a single logical record structure, (c) to be compatible with MARC II standards. In order to be able at some future date to restore the typographic format, all case and font control data were preserved in separate areas of the record which would not interfere with bibliographic processing.

2. TAPE FORMAT

The LC Subject Heading File is written in even parity onto 7 channel tapes at a density of 556 bpi, and in odd parity onto 9 channel tapes at 800 bpi. Each physical tape is ended by an end-of-file record (1717_8). The entire data file is terminated by a double end-of-file sequence. There are two tapes in the set.

2.1 Physical Records

Each physical record (or block) on the tape is a minimum of 86 characters and a maximum of 2048 characters including the size count field. The first 4 characters of a physical record give a count number of characters in the physical record; the count includes itself.

2.2 Logical Records

A logical record is a single Subject Heading entry, including all the following components:

Heading or Subdivision
(Direct) or (Indirect) (if entry is divided by place)
LC Class Numbers
Scope Note
sa references
also references
x tracings
xx tracings
Example under or note under
Prior Headings (if entry is a subdivision)
see references

In the remainder of this document the terms logical record and entry are to be considered synonomous, and are both to be taken to be defined as above.

The first 5 characters of each logical record are a count of the number of characters in the logical record. Logical records may be either smaller or larger than a physical record. If smaller than 2040 characters, then logical records are blocked or packed into physical records, until the size of a physical record approaches 2040 characters. A logical record is not packed into a physical record unless it can fit entirely. If a logical record cannot entirely fit into a block, then the partially filled block is written out, and a new block is begun. Thus, if a logical record is less than 2040 characters, then it will always be contained entirely in one block, and will never be split between 2 blocks. Logical records always begin on a multiple of 8 characters; record terminators (32_8) are used as padding.

If a logical record is greater than 2040 characters, then the record is split among several physical records. The number of physical records required can be determined by dividing the logical record size by 2040, and adding one to the quotient if there is a remainder. The division of an oversize logical record into several physical blocks, occurs arbitrarily without respect to the data (i.e. in the middle of a word or sentence), and each physical record has its size count as the first 4 characters. The maximum size logical record allowable in the LC Subject Heading tape is 7,200 characters. The last physical record of an oversize logical record does not contain any further blocked records.

3. RECORD FORMAT

The Library of Congress Subject Heading File uses the format specified by the Marc II Communications Format Standard. Thus, each logical record contains leader, directory, and data field sections.

3.1 Leader Section

Leader Field	Number of Characters	Character Position
Logical Record Length	5	1-5
Record Status Code	1	6
Legend		
a. Type code	1	7
b. ID code	1	8
c. Reserved (blanks)	2	9-10
d. Indicator flag	1	11
e. Reserved	1	12
f. Base address of data	5	13-17
g. Unassigned (blanks)	7	18-24

3.1.1 Logical Record Length

The total number of characters in the logical record, including itself (and other leader data fields). This count is the sum of the leader size (24 char.) plus the directory size, plus the size of the data section.

3.1.2 Record Status

O = Old record
N = New record
C = Changed or corrected record
D = Deleted record

3.1.3 Legend

a. Type code. Always "Y", to indicate authority data.
b. ID code. Always "7" for 7th edition.
c. Reserved
d. Indicator flag. Always zero, to show no indicator is used.
e. Number of characters in delimiter. Always 1.
f. Base address of data, relative to position zero (first character) of logical record.

3.2 Directory Section

Since data fields are all variable length, a consolidated directory or map is created. The consolidated directory describes each data field in the record. The directory gives the tag of each data field, its size, and its relative location in the record. The directory immediately follows the leader and is followed by a field terminator character.

Directory Field	Number of Characters	Character Position
Tag	3	1-3
Length	4	4-7
Locator	5	8-12

The above represents the structure of a single descriptor in the directory, and there will be a separate descriptor for each separate data field in the logical record. The directory section is itself variable in total length, depending upon the number of data fields in the record. The length of the directory is always a multiple of 12.

3.2.1 Tag

The tag is a 3 character code name for the data field being described. In the Subject Heading File tags range from 000 to 990.

3.2.2 Length

This is the number of characters in the data field being described. This count includes the field terminator characters and intra-item delimiters.

3.2.3 Locator

This is a pointer or index to the initial character of the data field. The location is given relative to the first character of the data portion of the logical record, which is counted as character number zero.

Example:

A record with 7 data fields, total length of 224 characters.

Section	Length	Character Positions (From-To)
Leader	24	0-23
Directory	85 (7x12+1)	24-108 (108 is field terminator)
Data Fields	variable	109-223

The first 2 directory descriptors (24-35, 36-47) read as follows:

Directory Field	Contents	Remarks
Tag	001	Tag of a Data Field
Length	0014	14 characters long (See 4.1)
Locator	00000	Data is in 00000-00013

Tag	008	Tag of a Data Field
Length	0010	10 characters long (See 4.2)
Locator	00014	Data is in 00014-00023

3.3 Data Field Section

All data fields (even those of known or fixed length) are treated as variable length items. Each field is terminated by a special character (BCD 13_8).

4. DATA FIELDS

Each data element begins with an intra-item delimiter (53_8). The tags appear in the directory, but not in the data field itself. Data fields may contain embedded intra-item delimiters ("$", 53_8), to separate class codes, see references, etc.*

4.1 Locator Field

Tag	0	0	1

The control number assigned to each entry is a locator number originally assigned by the Government Printing Office to provide for insertion of new or corrected copy. The number provides a means for controlled sorting of entries in correct filing rule order, using the locator number as a sorting field and not the actual heading. The control number consists of 12 characters as follows: 1234-567-890. The data field is $1234-567-890= (14 char.)

4.2 Variable Fixed Field

Tag	0	0	8

This field is a collection of summary or "administrative" information, describing salient points of the entire entry. The descriptive items are all in fixed positions relative to the beginning of the field (though they may occur anywhere within a logical or physical record). Example: $C1MDbbbb= (10 char.; b=blank)

Name of Fixed Position Sub-Field	Number of Characters	Character Position
LC Classification Number Code	1	1
Heading Level Code	1	2
Heading Descriptor Code	1	3
Direct/Indirect Code	1	4
Unassigned Characters (Blanks)	4	5-8

4.2.1 LC Classification Number Code

This one-character code shows the presence of one or more LC classification numbers associated with the entry. If a classification number is present, this field will contain a "C". Otherwise it will contain a blank.

---

*Note: The character set in data fields is single case (despite examples) and accent-free; 4.14-4.15 cover capitalization and accents.

4.2.2 Heading Level Code

This is a one digit code indicating the hierarchical level of the main heading or sub-heading in the entry. The level corresponds to the indentations of the heading in the printed format of the text. The codes are:

1 = Main heading
2 = Subdivision
3 = Sub-subdivision
4 = Sub-sub-subdivision
5 = Sub-sub-sub-subdivision

Example: "Accounting" as a main heading is coded with a "1". Its sub-division, "--Machine Methods," is a first level subdivision and is coded "2".

4.2.3 Heading Descriptor Code

In this code, one character describes overall characteristics of the entry. The codes are:

M = A bona fide subject heading or subdivision entry.

A = A special entry which contains only asterisks in the heading (field 040). These asterisks separate groups of headings or subdivisions to indicate the start of a new filing alphabet. (See pages 95 and 436 of the 7th edition of Library of Congress Subject Headings).

S = See heading or subdivision.

4.2.4 Direct/Indirect Code

One character here encodes the presence of the words "direct" and "indirect" in an entry. For further explanation of the use of these terms refer to page V of the 7th edition of the Library of Congress Subject Headings. "(Direct)" and "(Indirect)" will not be part of the data of the machine-readable record, but the code will allow the words to be regenerated if desired. The codes are:

D = (Direct)
I = (Indirect)
blank = not present

4.3 Previous Headings Field

Tag	0	2	0

If an entry is other than a main heading, i.e. a subdivision, the previous heading levels up through the main heading are carried in this field. Each heading recorded in this field is separated by an intra-item delimiter, "$" ($53_8$).

For example, the entry for "Juvenile literature" in the following sequence:

Text: Aeronautics
--Biography
--Juvenile literature

Delimiters

Data Field 020: $Aeronautics$--Biography= Field Terminator

"--Juvenile literature" would be carried in the Heading Field (040, see 4.5), and the Heading Level code (see 4.2.2) would be 3, indicating that the entry is a sub-sub-division.

4.4 Record Heading

Tag			
	0	4	0

This field contains the heading portion of the entry. It may contain a main heading or a subdivision.

Text: Aachen
--Siege, 1944

Data Fields 040: (main entry)$Aachen=
(subdivision)$--Siege, 1944=

4.5 LC Classification Number(s)

Tag			
	0	5	0

LC classification numbers, if present will be recorded in this field. Classification numbers will be separated by intra-item delimiters which will replace the semi-colons found in the printed text. The parentheses surrounding this data in the printed text will not be carried in the machine-readable record, nor will the italics be explicitly preserved since it is assumed that all class numbers are in italics.

Text: (Architecture, NA4800-6113; Church history, BX2501-2749; Local history, D-F)

Delimiters

Data Field 050: $Architecture, NA4800-6113$Church history, BX2501-2749$Local history, D-F=
Terminator

4.6 Scope Note

Tag			
	1	0	0

The scope note in an entry will be recorded in this field exactly as found in the printed text.

4.7 sa Reference(s)

Tag			
	3	0	0

All "sa" references are carried in one field, separated by intra-item delimiters.

Text: sa Cathedrals
Convents and nunneries
Monasteries
Priories

Data Field 300: $Cathedrals$Convents and nunneries$
Monasteries$Priories=

4.8 x Tracing(s)

Tag			
	3	1	0

All "x" tracings are carried in one field separated by intra-item delimiters.

Text: x Ear shells
Ormers
Sea-ears

Data Field 310: $Ear-shells$Ormers$Sea-ears=

4.9 xx Tracing(s)

Tag			
	3	2	0

All "xx" tracings are carried in one field separated by intra-item delimiters.

Text: xx Adrenal cortex
Adrenal glands
Cortisone
Hormones

Data Field 320: $Adrenal cortex$Adrenal glands$
Cortisone$Hormones=

4.10 See Reference(s)

Tag			
	4	0	0

All "see" references are carried in one field separated by intra-item delimiters.

Text: *see* Child welfare
Foundlings
Orphans and orphan-asylums

Data Field 400: $Child welfare$Foundlings$Orphans and orphan-asylums=

4.11 "Example Under" or "Note Under"

Tag			
	5	0	0

These will be recorded in this field exactly as found in the printed text.

4.12 "Also" references

Tag			
	6	0	0

This reference will be recorded in this field exactly as found in the printed text.

4.13 Italics

Tag			
	7	0	0

In order to preserve all the typographic information in the original file this field will be used to denote where italic type faces have been used to print the text. Fields which are entirely and invariably in italics, such as LC classification numbers, are not noted by this field.

The method used is to generate directory descriptors to locate areas in various data fields which were printed in italics. The directory locates the position of the first character of an italic string, and also gives the length of the string. Separate strings are denoted by separate directory descriptors.

Text: *See* Slaughtering and slaughter-houses *and subdivision* Slaughter-houses *under names of cities*

Assume the first italic character is at character position 256, in the entry. Two directory entries would be used to denote the presence of two italic strings:

	Tag	Length of String	Position in Entry
1st directory entry	700	0015	00256
2nd directory entry	700	0021	00289

The first descriptor indicates that italics will start at position 256 and continue for 15 characters; the second indicates that italics will start at position 289 and continue for 21 characters. The word See in the example does not need a field 700 entry because it is always in italics when used as above.

4.14 Diacritics

Tag	9	8	0

Typesetting accented characters in the 7th edition of Subject Headings was done by use of 4 special accent fonts or grids. Each position in the special grid corresponds to an accented character; for example ñ is in the position of r in grid 5, while è is in the position of D in grid 5. In the MARC II subject headings file data fields, a single unaccented character has been substituted for an accented character in a special grid, e.g., u for ü. However, to allow for reconversion back to a typographic format, the diacritic data field 980 will contain the symbol sequences necessary to produce the original accented character.

The diacritic data field consists of repeatable strings of fixed format data. Each string is an 8 character sequence as follows:

Delimiter: (1 character) always \$ (53_8)

Grid Number: (1 character) gives the grid number; 4-7

Locator: (4 characters) gives the location of the accented character in the data section of the record.

Case Control: (1 character) to indicate whether the special character to follow is in the upper or lower case section of the grid. 1 = lower, 2 = upper. This has nothing to do with the case of the character being accented.

Character: (1 character) the character as input by GPO specifying a grid position which contains the accented character.

The last string is followed by a terminator. = (13_8)

Text: Épinal, Battle of, 1870

In the record heading field (filed 040) this heading would appear without the diacritical mark. Assume the above heading to begin in character position 167 of the data section of the record.

Data Field 040: Epinal, Battle of, 1870
(data begins in char. 167)

Data Field 980:

Delimiter	Grid	Locator	Case	Character	Terminator
$	6	0167	2	C	▬

The first character is a delimiter. The next character gives the grid number; the next four characters denote the position of the character to be accented. The following character indicates upper case. The next says select position C, (which is É). The final character is a field terminator. In non-typographic processing data field 980 would be ignored.

4.15 Capitalization

Tag

9	9	0

Because it is assumed that the MARC II Subject Heading file will be used more for internal machine processing and research than for printing, all characters in the data fields will be represented as single case 6 bit codes (see section 5). Case shift data, like italics, have been eliminated from the main data stream and are carried separately in data field 990.

Data field 990 is very similar to data field 980; each element is a 5-character set: delimiter ($) followed by a four character locator which points to an upper case character in another data field.

In order to minimize the length and presence of data field 990, the following definition was made: the first letter of any data field or sub-field is assumed to be an upper case character and will not be denoted by a locator in data field 990. Similarly any character following an em dash will also be assumed to be capitalized. Blanks are not capitalized.

Text: A3J Vigilante (Bomber)

Data Field:040: $a3j vigilante (bomber)▬

Assume that the delimiter of field 440 begins in character 188 of the entry.

Data Field 990:

"J"	"V"	"B"	
$0191	$0193	$0204	▬

↑
Terminator

Data field 990 consists of 3 locators, denoting capitalization for J, V and B respectively. "A" is assumed to be in upper case since it is the first character of a data field.

5. CODE CONVERSIONS

5.1 Alpha Numeric

The standard BCD 6-bit coded representation of alpha numeric characters is used. A summary of this code set is given below:

Characters	Codes (octal)
A thru I	61 thru 71
J thru R	41 thru 51
S thru Z	22 thru 31
Zero	12
1 thru 9	01 thru 11

5.2 Special Characters

Two delimiters have already been mentioned: The inter-item delimiter is 13 octal (graphic is = or #); the intra-item delimiter is 53 octal (graphic is $). A 53 ($) is also used to represent a semi-colon (;) since this mark serves as an intra-item delimiter for separating LC class numbers. 32_8 is used as a record terminator. There are a number of special characters (of a typographic nature or punctuation) in the input data, and these were given character code assignments in the MARC II file.

Character	Octal code assigned	Graphic IBM 1412 printer
period	73	.
comma	33	,
left paren	34	(
right paren	74	)
3/4 em dash	40	-
ampersand	60	+
semi colon	53	$
hyphen	54	*
word space	20	blank
nut space (9 units)	72	?
em space (18 units)	57	△
close quote, apostrophe	56	:
open quote	55	j

5.3 Ligatures

In the input data ligatures were represented by single characters. In the input data the following scheme was used:

ligature	represented by
ffi	upper case 1
ffl	upper case 2
ff	upper case 5
fi	upper case 9
fl	upper case 0

In the output tape, these single ligature codes were expanded out to their intended two or three character sequence.

FILING SYSTEM FOR A BOOK CATALOG

Analysis of bibliographic filing rules, with a recommendation for computer implementation.

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I. INTRODUCTION AND SUMMARY

A. PURPOSE

The subsystem described in this chapter has two primary tasks assigned to it:

1. Generation of entries to be included in a book catalog output.
2. Establishment of a bibliographically acceptable order of entries in a book catalog output.

In conventional library practice, these two functions correspond to the topics of added entry tracings and catalog filing rules.

The first function increases access points to the data file by creating multiple versions of the same entry; each version (or added entry) is presented under a separate heading, distinct from the main entry. Examples of added entry types are: title, series, subjects, joint authors, etc. The second function, filing, enhances the usefulness of the final output by imposing a bibliographically coherent organization upon the natural alphabetic sequence of entries. In this organization, form frequently follows function in that the attempt is made to group together bibliographically similar items and to create useful subarrangements within these groups.

From the computer point of view, it is relatively straightforward to generate added entries from a single central master bibliographic record. Consequently, this topic is discussed and specified in a brief manner. Implementing bibliographic filing rules via computer, however, is far more difficult, because of the complex and implicit nature of traditional bibliographic filing schemes. Therefore, the major portion of this chapter is devoted to the elaboration of a logical framework within which various filing schemes can be analyzed. We will also develop table structures and specifications designed to fulfill the filing scheme recommended in Catalogs in Book Form and the most recent edition of ALA Rules for Filing Catalog Cards.[1]

* * * *

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[1] American Library Association. ALA Rules for Filing Catalog Cards. Second ed. Chicago, 1968. (Hereafter referred to as "ALA Filing Rules.")

B. NON-STANDARD SORT

The computer sort performed on catalog cards is a non-standard computer sort in two respects: 1) the structure of the data, and 2) the complex rules required to achieve the ALA filing order. For example, ALA filing requires the division of similar headings into subgroups that are filed in a classified order which disregards alphabetical order except within each subgroup. The following headings, which are in correct ALA filing sequence, illustrate this point:

London, Jack, 1876-1916	(single surname-personal author)
London	(non-single surname-corporate author)
London	(title)
LONDON	(subject)
LONDON-ANTIQUITIES	(subject)
London as it is today.	(title)
LONDON BRIDGE	(subject)

The complexity of the filing rules makes it impossible for a standard computer sort to result in ALA or any other particular library filing order for the following reasons:

1. The complete construction of a given heading is dependent upon the form of the heading, the bibliographic function of the entry and the user's preference. For example the heading may consist of an author with his dates and designations, and may be a main entry or an alternate or connecting entry. The complete heading must include controls to guarantee the proper filing and grouping of the entry according to heading form and entry type. In addition, the user may choose to determine whether to include (or exclude) dates, designations, relators, etc. in the heading, as well as specify the order of these elements, and the basic suborder of entries within an entry type group.

2. The text of a given heading is often not the text which is to be filed, i.e., information which appears in the heading must sometimes be spelled out in another form; information must be omitted; information not present in the heading must be supplied, etc. For example, if the text of a title added entry heading were "The Old Man and the Sea," the filing text would be "Old Man and the Sea," i.e., the initial article "the" would be disregarded in filing.

3. The filing sequence of characters (including the blank, numbers, letters, signs and symbols) in a standard computer sort is different than the order prescribed in library filing rules. In a standard computer sort the collation sequence is blank, numbers and letters, with punctuation, signs and symbols interspersed among the letters; in the ALA rules the collation sequence is numbers, letters, signs and symbols. Punctuation and diacritics are disregarded. We will distinguish four types of filing rules:

1) Those which pertain to the filing sequence by heading form and entry type
2) Those which pertain to the filing sequence by the body of the entry
3) Those which pertain to the filing sequence of words, and
4) Those which pertain to the filing sequence of characters.

Throughout this chapter the first kind of filing rule - form and type - will be referred to as heading construction; the second type - body of the entry - will be referred to as suborder arrangement; the third type - word by word - will be referred to as editing; and the fourth type - character by character - will be referred to as collation sequence. SORT KEYS, the ultimate goal of the filing system, will enable the computer to sort the numerous and varied catalog entries into the desired ALA filing order.

* * * *

C. RECOMMENDATIONS

The objective of this presentation is to provide a method to mechanically generate and arrange entries in a book catalog, dictionary or divided. The rules by which the arrangement is to be accomplished are basically those recommended by ALA and by Catalogs in Book Form.

ALA FILING RULES. The approach of attempting to design a system to file by the revised ALA rules (rather than the LC rules, or some other code) has been adopted for several reasons. In the first place, CSL currently uses a simplified (i.e.,more alphabetical and less classified) version of the 1942 (first edition) ALA rules. These rules which CSL uses are more similar to the revised ALA rules than to any other filing code.

Moreover, since the revised ALA rules are less complex than the LC or first edition ALA rules, they are easier to implement in a computer filing system. It also seems reasonable to assume that the future trend will be in favor of the adoption of the revised ALA rules. The 1942 ALA or LC rules could be implemented, with exceptions via MARC; but the new ALA rules appear better for a book catalog.

BRIEF COMPARISON OF FILING CODES. Although the three filing codes - revised ALA, 1942 and LC - all adhere to a basic alphabetic word-by-word order, they are readily compared on the basis of their complexity. The complexity of the codes is related to the problems stated in Section I.B. above. That is, it depends upon the degree of classed order arrangement when the same word, or combination of words, is used as the heading of different kinds of entries, and the degree of editing required to produce the filing text.

In a continuum of these three filing codes, the revised ALA is the least complex, LC is the most complex and the 1942 ALA lies in between. The revised ALA code is the least classed order: headings are arranged alphabetically word by word, without regard to form or punctuation, except that single surname entries are arranged before other similar entries.[1] Moreover, the editing of the headings and suborder arrangements required to produce filing text is comparatively minimal; for example, the modification of all letters (i.e.,diacritic marks such as the umlaut) is disregarded. In other words, an 'a' without an umlaut files in the same order as an 'a' with an umlaut.

The L.C. code is an alphabetic-classed order arrangement in which an arbitrary order is given to headings which are identical up to the point of subarrangement (generally indicated by a mark of punctuation), but which denote different things. The arbitrary order of arrangement is: person, place, thing and title. In addition, entries which are identical and denote the same thing are ordered arbitrarily according to the kind of entry: main, added and subject. The 1942 ALA code provides both a classed and alphabetical order of arrangement for certain types of headings, e.g.,title and place. Unlike the revised ALA code which disregards all punctuation, both the LC and 1942 ALA codes regard punctuation, except in titles.

---

[1] See ALA Filing Rules, p.1.

As previously stated, the problems of heading construction, sub-order arrangement, editing and collation sequence make a standard computer sort unsuitable for the achievement of any library filing order. However, since the revised ALA code is the least complex of the three codes discussed, achievement of this order by computer will require fewer and probably less complex modifications of the standard computer sort than would either the LC or 1942 ALA filing codes.

RELIANCE ON MARC FORMAT. It is intended that the proposed filing system be consistent with the MARC II format. Although MARC II was not designed primarily for filing, it appears that it will be possible to rely on the MARC format to provide all the data content cues necessary for a computer sort of the records according to the ALA filing rules.

MARC II contains numerous distinctions which will facilitate accurate filing of the various combinations of forms of headings (i.e., single surnames and non-single surnames and their bibliographic functions (main, author added or subject entries).

Distinctions are provided in the very structure of the MARC II tags and indicators, as well as in the subfield identification (delimiters). For example, the tag structure allows distinctions between personal, corporate and conference authors, and main, added, or subject entry types; the indicator structure for personal names allows distinctions between forename, single surname, multiple surname, or family name forms; the delimiters for personal names indicate the presence of dates, designations, numeration, etc, which are additional components of heading form.

The MARC II formatted record is essentially a catalog card fully identified to describe to the computer its data elements in a coded format. Coded records are familiar to librarians: "Shakespeare, William, 1564-1616" means one thing and "SHAKESPEARE, WILLIAM, 1564-1616" means another. The difference in type style represents coding which tells the filer that "this is an author heading" or "this is a subject heading" - information which allows the filer to arrange headings according to a particular set of instructions. In MARC II the computer recognizes subject headings by the presence of the tags 600, 610, 630, 650, 651 and 652.

MARC II will not be relied upon for the collation sequence. However, it will be relied upon consistently for heading construction, suborder arrangement and editing. Heading construction and suborder arrangement will be determined almost entirely from the MARC II format, but editing will require the manipulation of data (add, delete, or update) once it has been identified by the MARC II format.

DISPOSITION OF ALA EDITING RULES. There are four possible alternatives for handling each of the ALA filing rules related to editing: 1) computer edit, 2) manual edit, 3) defer, and 4) ignore. The choice of which disposition to use for each rule depends upon a consideration of the accuracy and economics involved. The goal, of course, is optimum accuracy at least cost.

Provided the program specifications are correct, it is reasonable to assume that greater accuracy will be achieved by computer edit than by manual edit. Manual edit requires that the human being remembers his responsibilities and carries them out. In place of remembering he may use procedural manuals which require time-consuming lookups.

Thus, it is recommended that manual editing be minimal. Its use will be suggested in only two situations: 1) when it is technically impossible for the computer to edit, due to complicated programming; and 2) when the infrequency of occurrence, relative to machine effort required, is too high. Chronologic subdivisions which require the addition of dates in order to file correctly are most in need of manual support. All manual editing is allocated to the task of authority verifications (see chapter VER).

Related to manual editing is the problem of Bible headings. The rules for Bible headings in the *Anglo-American Cataloging Rules* are different in several respects from the previous cataloging rules:

1) there are fewer entries under Bible;
2) some of the entries under Bible are simpler; and
3) some of the changes will have a major effect on the arrangement of Bible entries in the catalog, e.g. the version will come before the date, thus bringing all editions of a particular version together.

Since the order resulting from the new entry rules is more desirable, it is recommended that the new cataloging rules be adopted and old Bible headings be changed, if possible. For a résumé of the Bible heading changes and their effect on filing, see the ALA Filing Rules, pp. 152-4.

In the remainder of this chapter, editing is presumed to mean computer editing to achieve a normalized filing text. Specifications are given only for the ALA editing rules to be implemented; these are given in Section III. The list of ALA editing rules which currently are to be deferred will be found in Section II.

* * * *

D. BASIC PRINCIPLES OF FILING

Before discussing the complexities of computer filing of catalog data according to the revised ALA Filing Rules, it is necessary to state the basic principles of the ALA Filing Rules:

HEADING CONSTRUCTION. An analysis of the ALA Filing Rules shows that heading construction is a three part problem: a) selection of the data elements (i.e. subfields to be included); b) determination of the heading type; and c) determination of the entry's bibliographic function. The three parts of the heading construction problem are outlined and illustrated below:

Problem	Description
a) Selection of data elements	Name, date, title, etc.
b) Determination of heading form	Single surname or non-single surname (e.g. forename)
c) Determination of entry type	Main entry, added entry (author, series, title, subject)

Selection of the data elements to be included in headings depends upon user preference and the presence or absence of data elements. Elements such as those showing relationship, e.g.,"appellant" or "defendant", may be included or excluded from the heading depending upon the user's preference; elements such as designation and title may or may not be present.

Heading forms are classified according to two schemes: 1) the form of the author's name, and 2) the presence/absence of certain data elements (e.g.,dates, designations, etc.). The two schemes operate together to produce eight variations of heading forms ranging from single surnames alone to non-single surnames with form subheading(s). (See FILE Fig. 1). The basic sequence of headings with respect to each other is controlled by heading form. The various heading forms are independent of the entry type, i.e., they occur in both main and added entries.

According to the ALA rules, single surname headings file before non-single surname headings (i.e.,forename, compound, and multiple surnames) so that the single surname heading "London, Jack, 1876-1916," will file before the corporate author heading "London". Further, each form of heading may contain the following elements: dates, designation(s), numeration, form subheading and possibly a title. The presence or absence of these elements determines the order of similar headings within the same basic heading form. For example, "London, Jack, 1876-1916," a single surname heading with dates, files before "London, Jack, author," a single surname heading with a designation and no dates.

Entry Type. Within the basic sequence established by heading form, entries are further grouped according to entry type or bibliographic function. As previously noted, bibliographic functions are independent of heading forms, e.g.,there are both single surname subject added entries, and non-single surname subject added entries. Bibliographic function is reflected by grouping related entry types into five separate alphabets, as follows:

1) Author main entry, author/author-title alternate added entry, author analytic added entry and author-title series added entry;
2) Author/author-title connecting added entry;
3) Title main and added entry;
4) Title series added entry;
5) Subject added entry.

SUBORDER ARRANGEMENT. Within the same alphabet/group (i.e., bibliographic function) there is another level of order - a suborder - by the body of the entry. The suborder of the entries is a function of the alphabet/group: The five suborder arrangements are as follows:

1) Author main, author/author-title alternate and author analytic added entries are subordered by title;
2) Author/author-title connecting added entries are subordered by main entry;

3) Title main and added entries are subordered by main entry;
4) Title series added entries are subordered by number or main entry and
5) Subject added entries are subordered by the main entry or title.

EDITING. Sorting according to the prescribed collation sequence is not performed directly on the elements in the headings and suborder arrangements. Rather, it is applied to imaginary, or edited, headings and suborder arrangements mentally constructed, according to specific rules, by the filer. For example, the initial articles ('a', 'an', 'the' in English) in titles are disregarded in filing; the title The Old Man and the Sea files under "Old," not "The." In a computer filing system this mental juggling must be specified and programmed so that it can be performed by the computer.

There are two major forms of editing: 1) words which are to be disregarded, and 2) words which are to be modified, known as file as situations. As previously stated, implementation of some editing rules will be deferred or ignored.

COLLATION SEQUENCE. As previously stated, the sequence in which characters are generally ordered by the computer in a standard sort is not acceptable for a non-standard sort required for filing catalog data. The collation sequence (i.e.,the sequence in which characters should be ordered) for filing according to the ALA Filing Rules is as follows:

a. Alphabetical data are filed according to the order of the English alphabet.
b. Numbers are filed in numerical order.
c. A blank files before any other character.
d. All versions of each letter - upper and lower case, bold face, italics, Roman, etc. - have the same value for sorting purposes.
e. No sort sequence is prescribed for punctuation and diacritical marks; they are ignored.

II. APPROACH TO COMPUTER FILING OF CATALOG DATA

The preceding description of the basic principles is more mechanical and explicit than is necessary for human filers. This reflects the major difficulty presented by computer filing. The problem is not so much that the data must be manipulated in a complex fashion but that the information which the computer needs to perform the manipulations often is not explicit. Human beings are usually able to derive the required information from headings because of their education and training. Computers, however, are not comparably educated and trained; the information needed to perform the job must be made explicit. Therefore, computer programs need very detailed specifications to effect added entry generation and the bibliographic filing. A discussion of added entry generation and the four types of filing rules follows.

A. ADDED ENTRY GENERATION.

The notion of ordering entries in a book catalog, is strongly tied to the existence of "added entries" in the catalog. True, there are filing problems which arise in connection with catalogs consisting of only main entries. But all of the questions pertaining to heading construction, sub-order arrangement, and editing are closely related to specific types of added entries.

There are two requirements for added entries: 1) to specify the conditions, in terms of MARC tags and indicators, under which added entries are to be generated from a central Bibliographic Master Record (BIB MSTR), and 2) to define the generated record with respect to content and special data elements, particularly codes which will identify the type of added entry. Specifications for these two requirements will be found in Section III.B. of this chapter.

B. HEADING CONSTRUCTION.

As described in Section I.D., heading construction is a three level problem:

1. Selection and arrangement of data elements for inclusion in in heading, to be achieved by MARC subfield delimiters;

2. Determination and arrangement of heading forms, to be achieved by precedence codes; and
3. Determination and arrangement of entry types (i.e., alphabet/group) within the same heading form, to be achieved by function codes.

The diagram below lists the three levels of heading construction and the method which will be used to implement each.

LEVEL	CLASS	METHOD OF IMPLEMENTATION
1	Data Elements	MARC Subfield Delimiters
2	Heading Forms	Precedence Codes
3	Entry Types	Function Codes

DATA ELEMENTS. General rules for the selection of data elements include:

1) All headings contain MARC subfield $a;
2) Personal and corporate name headings do not contain relators (subfield $e);
3) In contrast to the ALA Filing Rules all designations (subfield $c), whether abbreviated or written in full, are part of the filing heading.

There is a basic pattern of data elements in author main, author/author-title alternate added, author analytic added, author-title series added, author/author-title connecting added and subject added entries. This basic pattern of data elements is present in personal name, corporate and conference name entries.

Within the basic patterns for the various personal, corporate and conference name entries, there are the following variations:

1. In author main entry, author/author-title alternate added entry, author/author-title connecting added entry or subject added entry headings, the subfield $t is seldom present.
2. In author analytic added entry headings, subfield $t is not part of the heading; rather subfield $t is the suborder arrangement data element and must be present. Note that

in the MARC format it is impossible to have a proper name... author analytic added entry heading since MARC does not provide for subfield $t in these headings.

3. In author-title series added entry headings, subfield $t always will be present, and subfield $v will be present if it is a numbered series.
4. In subject added entry headings any one or more of the subject subdivision subfields ($x, $y, $z) may be present.

For the remaining entries (i.e.,proper name added entry; title main and added entry; and uniform title, topical, geographical and political subject added entry), there is no basic pattern of data elements in the headings. In general these headings contain fewer elements than those for the personal, corporate, and conference name entries.

PRECEDENCE CODES. Headings such as "London" and "Love" are grouped by heading form: a) single surname, or b) non-single surname. Single surnames, according to the ALA filing rules, precede non-single surnames.[1] Within each heading form, headings are arranged alphabetically word by word, disregarding punctuation. Further, the headings are arranged so that the following order occurs:

a. Names without dates precede names with dates;
b. Names with dates precede names with designation (but not dates);
c. Names with designation precede names with numeration (but not dates), and
d. Names with numeration precede names with form subheadings (but not dates or designations).

The use of precedence codes to achieve the arrangement described above is illustrated in the two diagrams on the following page.

Proper placement of the precedence codes within the heading is critical to the achievement of the proper filing order. In single surname headings, regardless of entry type (i.e.,100, 400, 600, 700, 800), the precedence code must be placed within the $a subfield, immediately after the surname before the initials or forename, e.g.,"$aLove, 1.0 John,$d1820-1866." However, in non-single surname headings, the precedence code is placed after the $a subfield, e.g.,"$aLove and beauty 2.0 ."

---

[1] ALA Filing Rules, p. 93.

GROUP I: SINGLE SURNAME

`$aLove,` $\boxed{1.0}$ `John L.`
`$aLove,` $\boxed{1.0}$ `John L.,$d1820-1866`
`$aLove,` $\boxed{1.0}$ `John L.,$d1834-1872,$cSir`
`$aLove,` $\boxed{1.1}$ `John L.,$cCaptain`
`$aLove,` $\boxed{1.2}$ `John, L.,$bIV`
`$aLove,` $\boxed{1.1}$ `William`

* * * *

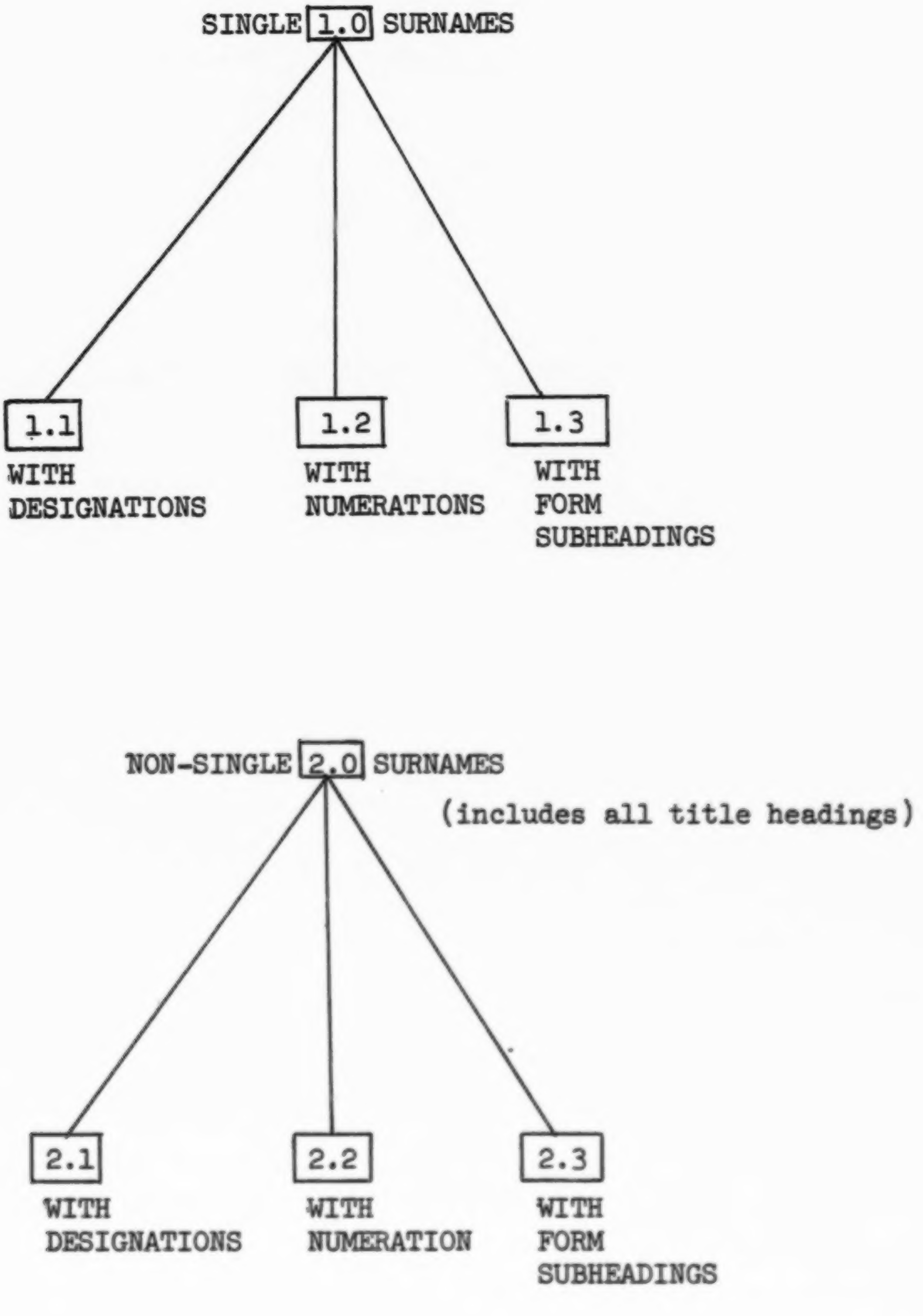
GROUP 2: NON-SINGLE SURNAME

`$aLove,` $\boxed{2.0}$
`$aLove,` $\boxed{2.1}$ `$cthe cupid`
`$aLove and beauty` $\boxed{2.0}$
`$aLove Brothers.` $\boxed{2.0}$ `$cCincinnati`
`$aLove Family` $\boxed{2.0}$
`$aLOVE FAMILY` $\boxed{2.0}$
`$aLOVE POETRY` $\boxed{2.0}$

The precedence code scheme necessary to produce the arrangements illustrated above is given in FILE Fig._1_. It should be noted that the filing of personal, corporate and conference names by dates (before designations) will occur naturally if the heading is constructed so that dates are placed immediately after the name. This is because the collation sequence stipulates that numbers file before letters. Therefore, there is not a separate precedence code for names with dates, not designations, etc. Placement of the date in the correct position in the heading will be handled by data element specifications.

In a similar manner, period subdivisions will file before other subject subdivisions as required by the ALA Filing Rules if the dates of the period subdivisions precede the alphabetical information. The proper placement of period subdivision dates will be taken care of in the authority verification system, see chapter VER.

PRECEDENCE CODE SCHEME


SINGLE 1.0 SURNAMES
1.1
WITH DESIGNATIONS
1.2
WITH NUMERATIONS
1.3
WITH FORM SUBHEADINGS
NON-SINGLE 2.0 SURNAMES
(includes all title headings)
2.1
WITH DESIGNATIONS
2.2
WITH NUMERATION
2.3
WITH FORM SUBHEADINGS

FILE Fig. 1

FUNCTION CODES. Identical headings within the same heading form are arranged in five alphabets/groups according to their entry type (i.e., bibliographic function):

1. Author main entry, author/author-title alternate added entry, author analytic added entry and author-title series added entry;
2. Author/author-title connecting added entry;
3. Title main and added entry;
4. Title series added entry; and
5. Subject added entry.

The scheme is flexible enough so that it would be possible, for example, to group the identical headings within the same heading form into simply three alphabets/groups: 1) all author, 2) all title, and 3) subject.

The example below illustrates the grouping of identical headings within the same heading form for the forename "Love" (a non-single surname) according to the five entry types listed above. Note that all function codes are placed immediately before the field terminator (₣).

precedence code ↘ ↙ function code

Love $\boxed{2.0}$ $\boxed{1.0}$ ₣ (Author main entry)

Love $\boxed{2.0}$ $\boxed{1.1}$ ₣ (Author connecting added entry)

Love $\boxed{2.0}$ $\boxed{2.0}$ ₣ (Title main entry)

Love $\boxed{2.0}$ $\boxed{2.1}$ ₣ (Title series added entry)

Love $\boxed{2.0}$ $\boxed{3.0}$ ₣ (Subject added entry)

The function code scheme necessary to produce the five alphabet/group arrangement of identical headings within the same heading form is given in FILE Fig. 2 . The order shown in the figure is a slight modification of the order given in the ALA Filing Rules.[1] It reflects the modifications necessary to do the following:

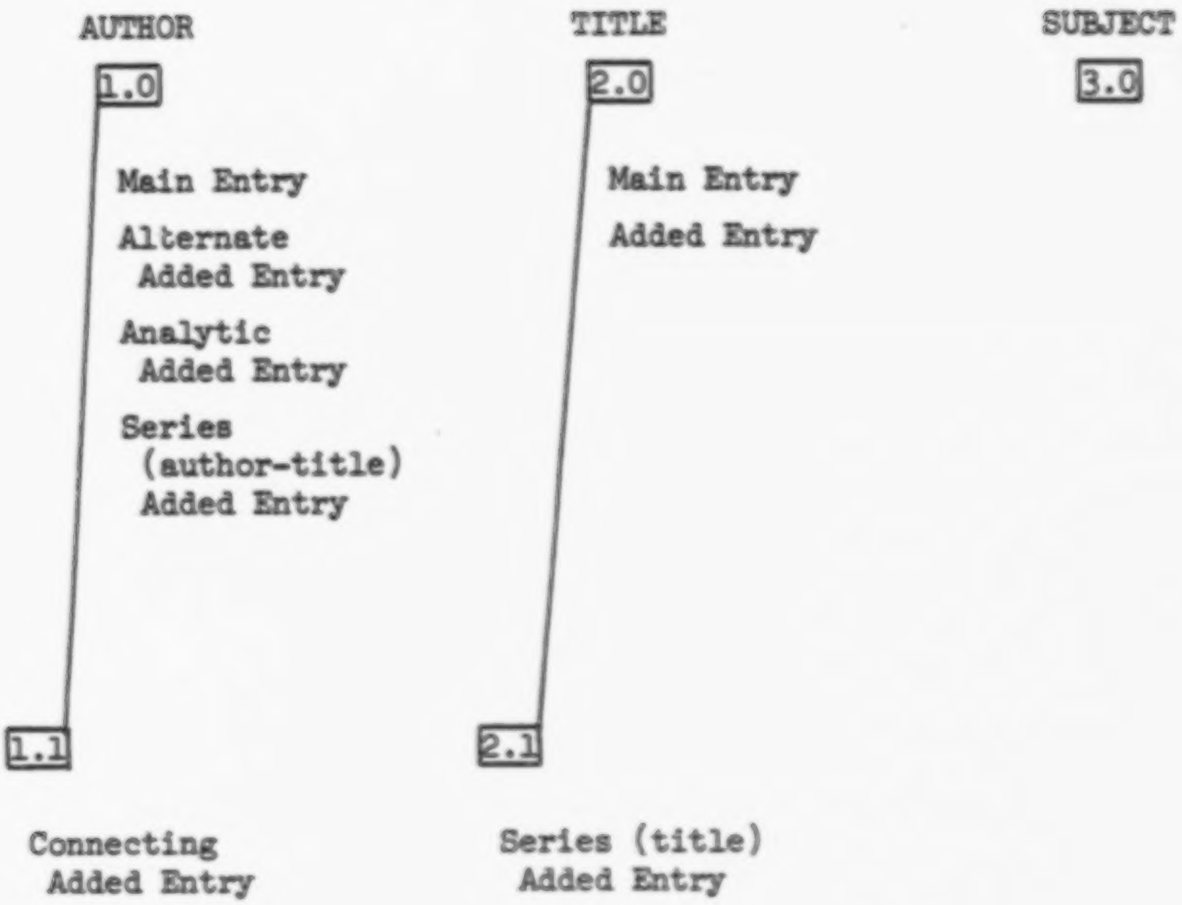
1. Separate author/author-title connecting added entries from other author entries as recommended in Catalogs in Book Form[2], and
2. Bring together identical entries, which obviates the necessity of multiple printings of the same heading.

---

[1] See ALA Filing Rules, p. 94.

[2] Cartwright, Kelley L. and Ralph M. Shoffner, Catalogs in Book Form. Institute of Library Research, University of California, Jan. 1967, p. 19.

FUNCTION CODE SCHEME


AUTHOR
1.0
Main Entry
Alternate Added Entry
Analytic Added Entry
Series (author-title) Added Entry
1.1
Connecting Added Entry
TITLE
2.0
Main Entry
Added Entry
2.1
Series (title) Added Entry
SUBJECT
3.0

FILE Fig. 2

C. SUBORDER ARRANGEMENT

Once the heading forms have been grouped with precedence codes, and the entry types (alphabets) within the heading forms have been grouped with function codes, it still may be necessary to suborder identical heading forms which have the same alphabetical grouping (i.e., are the same entry type). This subordering may be accomplished by filing on specified data elements in the body of the entry. It is a direct function of the specified alphabet/group.

The suborder arrangement for the five alphabets, illustrated below is given in FILE Figs. 3 - 7.

ENTRY	ENTRY TYPE	SUBORDER BY
London, Jack, 1876-1916 The call of the wild... The sea wolf.....	Main Entry	Title
London, Jack, 1876-1916 See also the following London, Joan....ed. Jack...	Author Added Entry Connecting	Main Entry
London, a guide to the public...	Title M.E.	Remainder of Title
London V.2, no. 1, Johnson, Samuel	Title Series A.E.	Number or M.E.
London Harrison, Frederic... Loftie, William John....	Subject A.E.	Main Entry or Title

SUBORDER ARRANGEMENT

Alphabet/Group: 1.0

Composed of Entry Types:
- Author Main Entry (M.E.)
- Author Alternate Added Entry (A.E.)
- Author-Title Alternate Added Entry
- Author Analytic Added Entry
- Author-Title Series Added Entry
  1. Unnumbered/Dated
  2. Numbered

TYPE OF ENTRY	SUBORDER BY
Author M.E.	Supplied Title[1], Short Title, Date
Author Alternate A.E./ Author-Title Alternate A.E.	Supplied Title[1], Short Title, M.E.
Author Analytic A.E.	Title of Analytic, M.E., Short Title
Author-Title Series A.E.	
1. Unnumbered	M.E., Short Title
2. Numbered	Number, M.E., Short Title

FILE Fig. 3

---

[1] Seldom present.

SUBORDER ARRANGEMENT (CONT.)

Alphabet/Group 1.1

Composed of Entry Types: Author Connecting Added Entry

TYPE OF ENTRY	SUBORDER BY
Author Connecting A.E.	M.E., Supplied Title[1], Short Title

FILE Fig. 4

Alphabet/Group: 2.0

Composed of Entry Types: Title Main Entry
Uniform Title Main Entry
Title Added Entry Traced Same
Title Added Entry Traced Differently

TYPE OF ENTRY	SUBORDER BY
Title Main Entry	Remainder of Title (subtitle), Date
Uniform Title Main Entry	Title
Title A.E. Traced Same	M.E.
Title A.E. Traced Differently	M.E., Supplied Title[1], Short Title

FILE Fig. 5

---

[1] Seldom present.

SUBORDER ARRANGEMENT (CONT.)

Alphabet/Group: $\boxed{2.1}$

Composed of Entry Types: Title Series Added Entry
1. Unnumbered/Dated
2. Numbered

TYPE OF ENTRY	SUBORDER BY
Title Series A.E.	
1. Unnumbered/Dated	M.E., Supplied Title[1], Short Title
2. Numbered	Number, M.E., Supplied Title[1], Short Title

FILE Fig. 6

Alphabet/Group: $\boxed{3.0}$

Composed of Entry Types: Subject Added Entries (personal, corporate, conference name; uniform title heading; topical; geographic; and political jurisdictions)

TYPE OF ENTRY	SUBORDER BY
Subject A.E.	M.E. or Title[2]

FILE Fig. 7

---

[1] Seldom present.

[2] The Stanford Undergraduate Library Subject Catalog suborders subject added entries by title rather than main entry. Main entry suborder for subject added entries is recommended by ALA and CIBF.

D. EDITING

Word by word filing by computer, known as editing, is a relatively complex problem which concerns both headings and suborder arrangements (i.e., body). There are two situations in which editing is necessary to achieve proper filing. The first requires that some of the information which appears in the heading or body be disregarded. The second requires that data file as if it were in a different form or order than it actually is in the heading or body of the entry.

* * * *

DISREGARD. The ALA Filing Rules specify numerous types of information in various situations which are to be disregarded. However, in this system only five types of information will be disregarded:

1. All initial articles, except those in personal names. (R4A, p. 9)[1]
2. All punctuation. (R2D3, p. 8)
3. All diacritics. (R2A, p. 3)
4. Non-numeric information in the data subfield in personal entries and in the volume subfield in the series entries.
5. All relators, i.e., MARC subfield $e in personal and corporate headings. (R26B3, p. 115-6) Note that this editing situation will be handled by the heading construction specs for data elements. Relators simply will not be included in personal and corporate name headings.

Disregard editing situations which will be deferred by the CSL-PC system at this time may be divided into two types: 1) Those situations in which deferment will make a difference in the filing order; and 2) Those situations in which deferment will not make a difference in the filing order.

The following ALA "disregard" rules will be deferred and will cause deviations from the ALA filing order:

1. Initial articles:
    a. In subject subdivisions, e.g., "AGRICULTURE - THE WEST." (R4B, p. 12)
    b. In the name of a part of a work, e.g., "Canterbury Tales. The Knight's Tale. German. Selections." (R27C1, p. 136)

---

[1] The ALA rule number and page(s) on which it appears is given in parentheses following the statement of the rule.

   c. In inverted place name references, e.g.,"Mans, Le." R4A, p. 12)

   d. In inverted title headings, e.g.,"Antiques. A Treasury of." (R4B, p. 12)

   e. In uncapitalized Arabic ("al" or "le") and Hebrew ("h" or "he") prefixed to names, e.g.,"al-Jundi" or "ha-Cohen"). (R15A1, p. 76-7)

2. Abbreviations used in designations (i.e., MARC subfield $c) with name headings and at the end of corporate names, e.g., "Thomas, Aquinas, St." (R6D, p. 27)

3. Author phrases, e.g.,"by" or "of", plus author's names. (R26B5, p. 117)

4. Author's name at the beginning of title unless it is the author's pseudonym or is an integral part of the title, e.g.,"Cicero's Epistles to Atticus " would file as "Epistles to Atticus." (R26B6, p. 118-20)

5. Initial adjectives denoting royal privilege, e.g.,"K," "K.K.", "I.", "R.", found only in old style headings. (R6E, p. 27)

6. Designations (i.e., MARC subfield $c) in headings for sovereigns, noblemen and popes when comes between given name and designation, e.g.,"William I, the Conqueror, King of England, 1027-1087." (R25A3, p. 109-10)

7. Second given name or family name that comes between a number and designation, e.g.,"Gustaf I, Vasa, King of Sweden," and "Gustaf II, Adolf, King of Sweden." (R25A4, p. 111)

In contrast to the above list of rules, deferment of the following ALA "disregard" rules will not cause any deviation from the ALA filing order:

1. Designation(s) or Identifier(s) (i.e., MARC subfield $c), unless necessary to distinguish between names that would otherwise be identical --

   a. Of office following a name, e.g.,"Kennedy, President of U.S." (R20A5)

   b. Of nobility, honor or address in surname, e.g.,"Jones, Mr." (R20D1, p. 97)

   c. Following forenames, e.g., "John, captain." (R20D3, p. 98)

   Note: In this system all designations, whether abbreviated or written in full, always will be regarded in filing.

2. Date if both place and date are present without sequence in corporate headings, e.g.,"Olympic Games, London, 1948." and Olympic Games, Los Angeles, 1932." (R36C4, p. 208)

3. Number in title of nobility in surname headings, e.g., "Campbell, John, 5th Duke of Argyll." (R20E6, p. 20)

4. Number or date following a given name unless necessary to distinguish between given names with the same designation, e.g.,"Charles I, King of Great Britain," and "Charles II, King of Great Britain." (R25A2, p. 109)

5. Name referring to a chief of state, in parentheses and following date, e.g.,"U.S. President, 1801-1809 (Jefferson)." (R36E1, p. 210)

Note that in deferring the ALA rules cited above we are in effect including data that ALA chooses to eliminate in their filing practice. Thus the underlined portions of the examples show data elements that ALA would ignore but that CSL-PC will file on.

FILE AS. Again, the ALA Filing Rules specify numerous situations in which it is necessary to sort on information that is not present (as if it were present) or on information that has been rearranged in some manner, e.g.,modified or reordered. In this filing system, however, there are only five situations specified in the ALA Filing Rules in which information will be edited to file in a different form or arrangement. These situations are:

1. Acronyms written with no space between letters or in upper case with a period but no space between letters (latter is a slight variation from ALA rules) file as a single word, e.g.,"Unesco," or U.N.E.S.C.O." (R5K, p. 19-20)

   Note, however, that acronyms written with a space between letters or a period and a space between letters will file as separate words, e.g.,"U N E S C O" or U. N. E. S. C. O." This is due to the system's normal definition of a word: any group of letters bounded by blanks. This editing situation will be taken care of by the specs for punctuation.

2. All hyphenated words file as one word, e.g.,"epoch-making" files as "epochmaking." (This is a variation from ALA rules; see R11, p. 55; R11A1, C5, p. 62 and R20D4, p. 98)

3. Names beginning with M' or Mc file as Mac, e.g.,M'Laren, "McLaren," and "MacLaren." (R14B, p. 74)

4. All proper names with prefixes (i.e. beginning with separately written prefixes such as an article, preposition, combination or term which originally expressed relationship) with or without a space, hyphen, or apostrophe between the prefix and name,

file as one word, e.g.,"Delmar," "DeMorgan," "LaCrosse," and O'Brien." (R14A, pp. 68-74)

5. Period subdivisions in subject headings file in chronological order. If dates are not present in period subdivisions they will be prefixed to the period subdivision via the verification system; see chapter VER. (R32G, p. 176)

In addition to the above ALA "file as" rules which will be implemented there are several situations in which computer filing makes it necessary for information to file as if it were something other than it is or as if it were rearranged in some manner. These computer "file as" rules which will be implemented are:

1. Arabic numbers, e.g.,in period subdivisions, file as if normalized and right justified, using 10,000 as the base (i.e., "zero") year.
2. Dates before Christ (B.C.) file as if normalized and right justified, e.g.,"953 B.C." files as "09047" using 10,000 as the base year.
3. Roman numerals in numeration (MARC subfield $b) file as if they were Arabic numbers, i.e., "I" files as "1," "II" files as "2," etc.,up to XXV.
4. In author-title series added entries the "His" files as that portion of the MARC subfield $a in main entry tag 100 which comes before the first or possessive mark of punctuation, and the "Its" files as MARC subfields $a and b in main entry tag 110 if it is a corporate entry or as MARC subfield $a in main entry tag 111 if it is a conference entry, e.g.,"His. Works." files as "Shakespeare. Works."

Proper computer filing of call numbers will be deferred. Call numbers are a classed number consisting basically of two parts: 1) classification number and 2) book number. Because of this a direct sort of call numbers will not achieve proper filing order. In order to achieve proper filing order it would be necessary to determine the two parts of the call number and normalize each part before sorting.

Again, there are many ALA "file as" rules which will be deferred. (The information indicated in the following rules will file as it is, not as specified by the rule).

1. Abbreviations of parts of the Bible (N.T.), manuscripts, (Mss), titles of address (Mr.) geographic names (U.S.), etc.,file as if written in full in the language of the entry, e.g., "N.T." files as "New Testament" and "Bp" files as "Bishop."

(R6A, pp. 21-9; R29G, p. 156; R2C7, p. 7)

Note: in our system, abbreviations, except for those in subject headings (which will be spelled out by the VER system), will file as is, not as if written in full.

2. The ampersand files as if written in full in the language of the entry, e.g.,"&" files as "and." (R8D, p. 39)

   Note: in this system the ampersand will file as the symbol "&". (See collation table for filing rank.)

3. Compound proper names file as separate words, e.g.,"Martin-Leake" files as "Martin Leake," not "MartinLeake." (R13A, p. 65)

   Note: in this system compoind proper names always will file as one word, i.e.,"Martin-Leake" will file as "MartinLeake" (not "Martin Leake").

4. Compound words, whether hyphenated, written as one word or as two words, file as one word, e.g. "bookmark," "book-mark," and "book mark" all file as "bookmark." (R11B1, p. 56)

   Note: in this system variant forms of spelling words will not be normalized, except in name and subject headings.

5. Hyphenated words in which the parts are complete words, i.e., when each part can stand alone as a word in the context of the combined word (e.g.,"epochmaking," but not co-operative" or "A-boating") file as separate words. (R11A, p. 55)

   Note: in this system all hyphenated words will file as one word. This is because the removal of the hyphen (a mark of punctuation) and subsequent closing of the text will cause such words automatically to become one word.

6. Ligatures file as separate letters e.g.,"Æ tna" files as "aetna." (R2b, p. 5)

   Note: in this system ligatures will file as a single letter, e.g. "Æ tna" will file as if spelled "Etna."

7. Numerals in titles of books, corporate names, cross references, etc., file as if spelled out in the language of the entry, e.g., "1001," files as "One thousand and one." (R9, pp. 38-46)

   Note: in this system numerals always file as numerals, not as if written out in full.

8. Signs and symbols in titles that are ordinarily spoken as words file as if written out in the language of the entry, e.g., "Two + Two" files as "Two plus two." (R8E, pp. 37-8)

9. Titles such as "Report" which are preceded by a series of numbers written out file numerically, e.g.,"First Report," "Third Report" and "Fourth Report." (R36B2b, p.207)

   Note: in this system titles such as these will file alphabetically.

In computer filing editing is done after the headings have been constructed and the suborder arrangements have been determined. Two steps are involved. The first is to identify the editing problem with the aid of the MARC II format. The second is to manipulate the data as required, i.e., delete, add or update.

For example, initial articles in titles may be identified by looking in all $a subfields with MARC tags 130, 240, 245, 440, 630, 730, 740 and 840 (titles) and $t subfields with MARC tags 100, 110, 111, 400, 410, 411, 600, 610, 611, 700, 710, 711, and 800, 810, 811 (titles within author entries). Then the first three characters following $a or $t, depending upon the tag, may be compared with the items in a table of initial articles, e.g., "a" "an," and "the" in English. If a match is made with one of the items in the table and is followed by a blank, an initial article in a title has been located. The filing address pointer is then moved to the word immediately following the initial article. Thus, the title The Old Man and the Sea would be sorted on "Old Man and the Sea." The address pointer would point to the "o" in old, not the "t" in the.

E. COLLATION SEQUENCE

Character by character filing by computer, known as collation sequence, is a relatively simple problem. Human beings seldom think about it because they perform collation sequence manipulations (e.g., filing words according to the order of the alphabet) more or less unconsciously.

However, for the computer to do character by character filing, it is necessary to specify explicitly in the sort program the sequence in which all characters acceptable to the computer are to be ordered. The character order required for filing catalog data is as follows:

1. Punctuation and Diacritics
2. Space (i.e., blank)
3. Numbers
4. Letters
5. Signs and Symbols. Note, however, that ALA files signs and symbols before letters when used as an author in author headings. (See R8A, p. 32).
6. Ligatures

Since punctuation and diacritics are disregarded in filing, they are not logically part of the collation sequence. However, they are included in the collation sequence as an aid to the editing. That is, since punctuation marks are disregarded they may be considered as having a filing rank of zero. Then using this information, all characters with a filing rank of zero (namely punctuation and diacritics) can be deleted from the filing text and the blank(s) closed up during the final editing phase prior to sorting.

Ordering letters presents a special problem for computer filing. If a filer encountered the titles "United for Peace," "United States Foreign Policy Under Roosevelt," and "United we stand," he would file them in the order given here because the f in 'for' precedes the S in 'States,' which precedes the w in 'we,' without regard to the fact that two of the letters are in lower case and one is in upper case. For purposes of computer filing, however, this rule must be made explicit, and processes for effecting its application must be worked out.

The reason for this is that since 'A' and 'a,' 'B' and 'b,' etc., are distinct symbols, they must be represented differently to the machine. At sorting time, therefore, some method of making these pairs of letters equivalent must be available. One method is to convert the text to a single case for sorting purposes--so that, the text upon which the second example above files internally must be either "UNITED STATES FOREIGN POLICY UNDER ROOSEVELT" or "united states foriegn policy under roosevelt." The process of converting upper and lower case text to a single case is quite straightforward. Another method, the one recommended in this system, is to specify in the sort program that the filing order (rank) of upper and/lower case letters, i.e.,'A' and 'a,' 'B' and 'b,' etc.,is equivalent. This, too, is a straightforward process. In either case the print form containing the upper and lower case letters is preserved.

III. SPECIFICATIONS

A. SORT KEYS

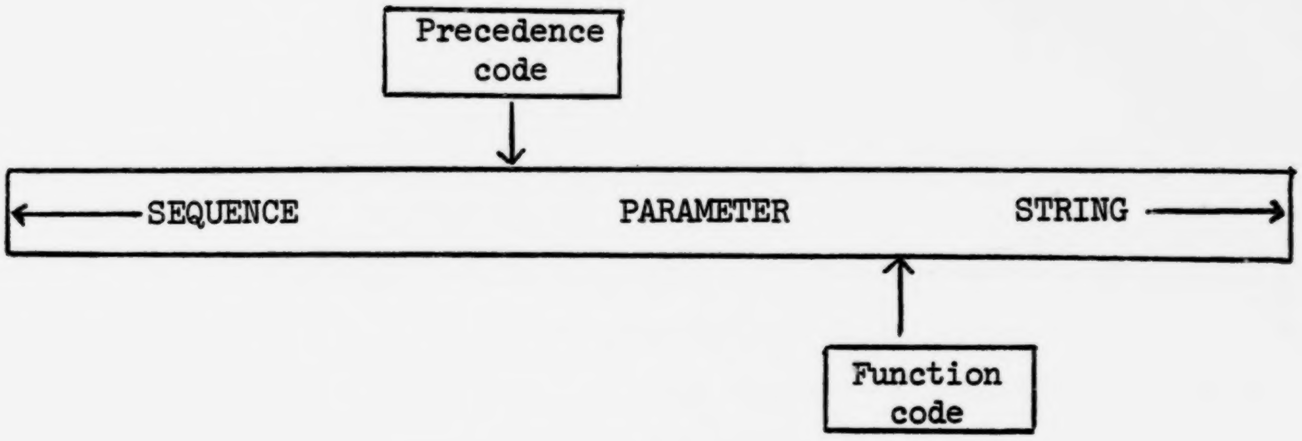
Thus far we have discussed the complex of components which determines an entry's position or sequence in an output book catalog. These sequencing components may be summarized as functions of:

entry type
heading form
subheading arrangement patterns
word-by-word editing
letter-by-letter editing

All of these have been described in detail in the preceding sections, along with various implementing code structures such as precedence codes (for heading forms) and function codes (for entry types). What we will now attempt to deal with is the potential machine-form representation of the entire set of sequencing parameters in any given record.

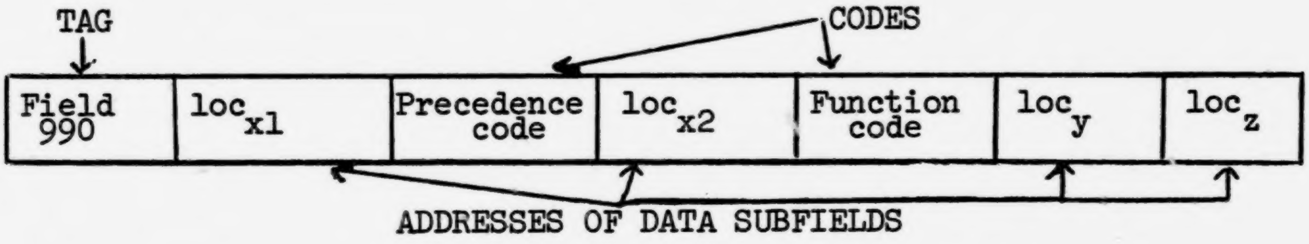
Taken together, the sequencing parameters for any given entry may be considered as one single consecutive data string, although physically the various data elements (i.e.,parameters) may be scattered throughout the record. From the point of view of computer processing this means that three sequencing parameters X, Y, Z may be found at three discrete non-continuous record locations: loc_x, loc_y, and loc_z, for example, 500-530, 110-125, and 341-357, respectively. This usually results in X, Y, and Z being extracted from their separated locations and reformatted as one continuous data field known as a "sort key". Frequently the sort key is situated as a prefix (fixed or variable length) to the entire record; in the above case a 64-character prefix would result. (Such a record prefix, we should note, is somewhat awkward within the MARC record structure, as well as expensive in extra character length.)

In the CSL-PC system we would like to preserve the notion of one logically continuous sequencing parameter. However, we wish to emphasize the logical divisions of the parameter string, rather than its arbitrary physical locations. These logical breakpoints are signalled by the position of the precedence and function codes within the string.


Precedence code
SEQUENCE PARAMETER STRING
Function code

Thus for all practical purposes, the parameter string is composed of subfields or sets of subfields and of special codes.

These data elements and codes could be readily formatted into a sort key prefix. However a more attractive alternative is also possible, one which is more consistent with the MARC record structure and is less expensive in extra character length added to the total record. This alternative is simply to describe the sequence parameter string in a distinct MARC field, which will be called field 990 for purposes of illustration. Field 990 will contain the addresses of the data subfields which constitute the sequence parameter string rather than containing data itself. The precedence and function codes will also appear -- as data -- in this field.

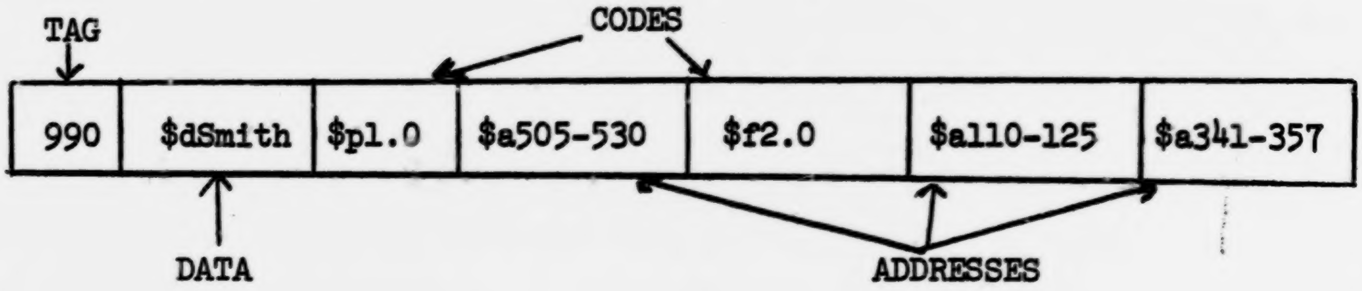

TAG
CODES
Field 990
loc$_{x1}$
Precedence code
loc$_{x2}$
Function code
loc$_y$
loc$_z$
ADDRESSES OF DATA SUBFIELDS

The above schematic illustrates the 990 data field; loc$_n$ gives the initial and terminal locations of a data string which is part of the sequence parameter set; the embedded codes are self-explanatory. One obvious point is that we need 990 subfield delimiters to distinguish data addresses from sequencing codes; the following set will be used:

$a = address
$p = precedence code
$f = function code

A second obvious point is that in general the character cost of such a scheme will be very economic except in those cases where the data being addressed is less than or equal to ten characters. For such cases we should allow the data to appear directly in field 990, under the subfield delimiter \$d = data.

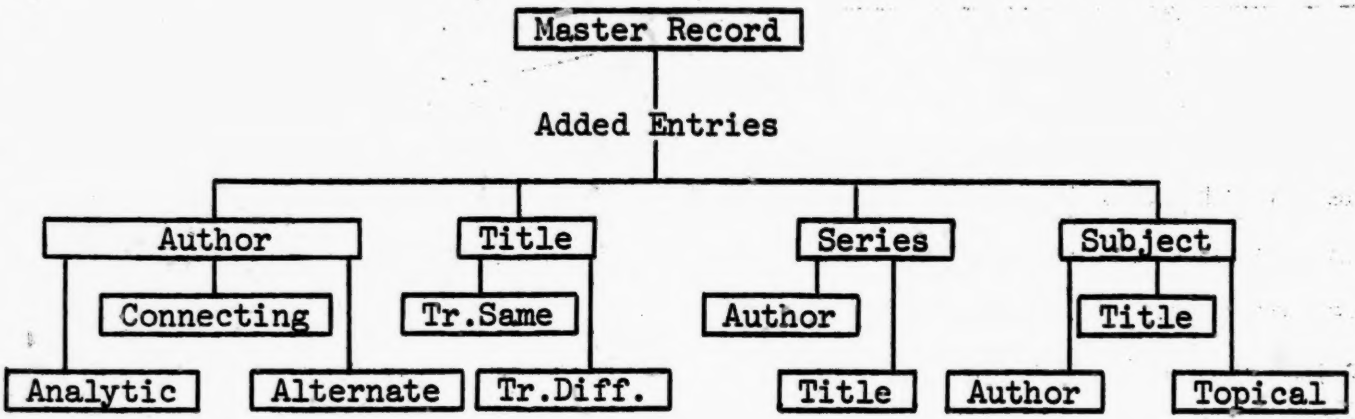
Thus our earlier example might appear as follows:


TAG
CODES
990
$dSmith
$pl.0
$a505-530
$f2.0
$a110-125
$a341-357
DATA
ADDRESSES

The \$d subfield is utilized for a short sequencing parameter. It may also be used to represent a data field which has been extensively edited, e.g. one containing diacritics. The form of editing which consists of dropping initial articles (mostly in titles) can be effected without recourse to the \$d technique by setting the initial portion of the data field address to point to the word following the initial article to be ignored.

B. ADDED ENTRY GENERATION

The input record from which added entries are to be generated is the BIB MSTR record, which is a main entry record. This master record is analyzed, and undergoes a one-to-many mapping into all of its potential added entry structures.


Master Record
Added Entries
Author
Connecting
Analytic
Alternate
Title
Tr.Same
Tr.Diff.
Series
Author
Title
Subject
Title
Author
Topical

The mapping is shown in the diagram above, in terms of primary added entry types (Author, Title, Series, Subject) and possible subcategories of each primary class. The following outline will specify each of the added entry classes and subclasses.

For the purposes of this outline, main entry and its subclasses will also be defined.

FILE

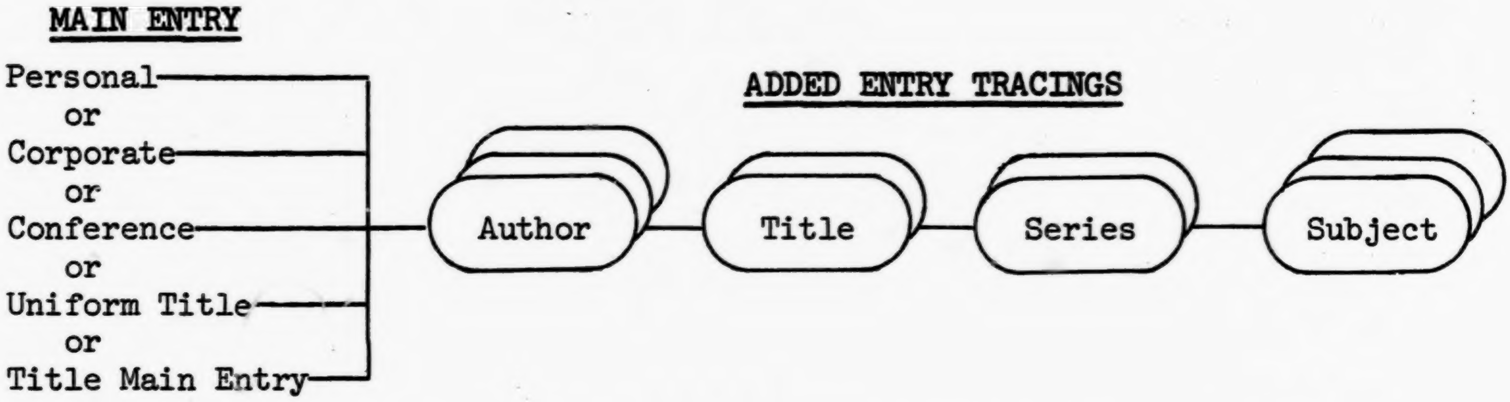
ENTRY GENERATING CONDITIONS

CLASS	MARC		CATALOG DIVISION					
Subclass	Tags	Ind/Delim	Auth	Title	Subj	Names	Title	Subjs
1. MAIN								
1.1 Personal Auth	100		x			x		
1.2 Corp Auth	110		x			x		
1.3 Conference	111		x			x		
1.4 Uniform Title	130			x			x	
1.5 Title M.E.	245 and not 1XX			x			x	
2. AUTHOR ADDED								
2.1 Alternate	700/710/711	Ind 2=0	x			x		
2.2 Connecting	700/710/711	Ind 2=1	x			x		
2.3 Analytic	700/710/711	Ind 2=2	x			x		
2.4 Proper Names	750		x			x		
3. TITLE ADDED								
3.1 Traced Same	245	Ind 1,2=1		x			x	
3.2 Traced Diff.	730/740			x			x	
4. SERIES ADDED								
4.1 Author	400/410/411 800/810/811		x			x		
4.2 Title	440/840			x			x	
5. SUBJECT ADDED								
5.1 Author is M.E.	100/110/111	Ind 2=1			x	x		
5.2 Author	600/610/611				x	x		
* 5.3 Title	600/610/611	Delim=$t			x		x	
5.4 Uniform Title	630				x		x	
5.5 Topical	650/651/652				x			x

* optional

Each of the conditions specified above leads to the generation of an entry for the output catalog. If the output is to be a book catalog, the entry classes/subclasses fall into various ordered groupings and alphabets; the details of this are given elsewhere in this chapter. If the output were to be conventional 3x5 cards, then the added entry headings would appear as traced headings at the top of each added entry card.

With respect to one given entry (one BIB MSTR record), there may be only one main entry subclass; that is the subclasses are mutually exclusive. Within that same entry, there may be one or more of each major class of added entries; that is the added entry classes are not mutually exclusive with respect to one another and are repeatable with respect to themselves. Within an added entry class, however, each subclass is mutually exclusive. Schematically this can be represented by the following:



In the example above, the single BIB MSTR record would generate one main entry record, and the following separate added entry record: three author, two title, two series, three subject; nine records in all. Each generated record would contain the main entry and full descriptive cataloging, but not any tracings other than the one which generated the entry. This is done to reduce the number of characters in each generated record. Thus the generated main entry will contain no tracings, and other generated added entries will contain only one tracing (plus main entry and descriptive cataloging). In addition each record will carry a code indicating the entry type, in positions 8-10 of the record leader (see MARC Subscriber's Guide, p.26).

An extensive example will be used for further clarification. Consider the following BIB MSTR record:

A SINGLE BIB MSTR RECORD

MARC Tag	Ind	Field Name	Category
008		Control Field	Descriptive
010		LC Card No.	Descriptive
050		LC Call No.	Descriptive
090		Local Call No./Holdings	Descriptive
110	2 = 1	Main Entry, Corporate	M.E.
		Main Entry is Subject	A.E.-1
245	1 = 1	Title	Descriptive
		Title Traced Same	A.E.-2
260		Imprint	Descriptive
300		Collation	Descriptive
410		Series, Corporate	Descriptive
		Series Traced Same	A.E.-3
500		Note	Descriptive
610		Subject, Corporate	A.E.-4
650		Subject, Topical	A.E.-5
700	2 = 0	Alternate A.E., Personal Name	A.E.-6
710	2 = 1	Connecting A.E., Corporate	A.E.-7
740		Title A.E., Traced Different	A.E.-8
810		Series A.E., Traced Different	A.E.-9

The example corresponds exactly to the diagram on the preceding page. The record will generate one main entry record plus nine added entry records.

Each generated record will contain the main entry plus all descriptive cataloging. (Descriptive cataloging is defined, in terms of MARC, as all data fields except those in the 6xx, 7xx and 8xx series.) The following is a table of the contents of each of the ten generated entries (The descriptive fields in the example are: 008, 010, 050, 090, 245, 260, 300, 410, 500.)

Category	Pos 8-10 Leader	Descriptive Fields	Main Entry	Tracing Field
Main Entry	010	All	110	None
M.E. Subject	110	All	110	None-use 110 field
Title-Same	245	All	110	None-use 245 field
Series-Same	410	All	110	None-use 410 field
Subject A.E.	610	All	110	610 only

(Table Continued)

Category	Pos 8-10 Leader	Descriptive Fields	Main Entry	Tracing Field
Subject A.E.	650	All	110	650 only
Alt. A.E.	700	All	110	700 only
Conn. A.E.	710	All	110	710 only
Title A.E.	740	All	110	740 only
Series A.E.	810	All	110	810 only

Note that the entry type code in pos 8-10 of the leader corresponds to the MARC tag of the entry generating condition, except in the case of main entry where codes 000, 010, 011, 030 and 045 are used for tags 100, 110, 111, 130 and title main entry (245 and not 1xx) respectively.

C. HEADING CONSTRUCTION

The heading construction specs consist of three sets of decision tables, one set for each aspect of heading construction:

1. Data Elements (Selection),
2. Precedence Codes and
3. Function Codes.

DATA ELEMENTS. The condition, specified by the entry type and the MARC tag(s) and indicators, determines the action, i.e., the subfields to be included in the heading, which is given in the form of the MARC subfield delimiter(s) in filing order. Note that subfield $a is present in all headings.

PRECEDENCE CODES. There are two precedence code decision tables, one each for the two heading forms: single surname and non-single surname. In each table the condition (specified by the entry type and MARC tag(s), indicators and delimiters) determines the action, i.e., the precedence code to be assigned and the placement of the precedence code within the heading. In single surname headings the precedence code replaces the first comma or left parenthesis in subfield $a, while in non-single surname headings the precedence code is placed following the subfield given in the non-single surname precedence code table.

FUNCTION CODES. Again, the condition (specified by the entry type and MARC tag(s) and indicators) determines the action, i.e., the function code to be assigned to the heading. In every case, the function code is placed immediately preceding the field terminator (F̸).

The symbols and abbreviations used in the heading construction and suborder arrangement specs include:

-	Not important or not present
b	Blank
,	Or
/	Or
ind	Indicator
A.E.	Added entry
M.E.	Main entry
N	No
Y	Yes

HEADING CONSTRUCTION SPECS

DATA ELEMENTS

CONDITION				ACTION
ENTRY TYPE	TAG(S)	IND.		SUBFIELDS (DELIMITERS) IN FILING ORDER
		1	2	
Author M.E.				
Personal	100	-	-	$a $d $c $b $k $t[1]
Corporate	110	-	-	$a $b $k $t[1]
Conference	111	-	-	$a $b $c $d $e $g $k $t[1]
Author Alternate A.E./ Author-Title Alternate A.E.				
Personal	700	-	0	$a $d $c $b $k $t[1]
Corporate	710	-	0	$a $b $k $t[1]
Conference	711	-	0	$a $b $c $d $e $g $k $t[1]
Proper Names...	750	-	0	$a
Author Analytic A.E.[2]				
Personal	700	-	2	$a $d $c $b $k
Corporate	710	-	2	$a $b $k
Conference	711	-	2	$a $b $c $d $e $g $k
Author-Title Series A.E.				
Personal	400, 800	-	0,1,b	$a $d $c $b $k $t[3] $v[4]
Corporate	410, 810	-	0,1,b	$a $b $k $t[3] $v[4]
Conference	411, 811	-	0,1,b	$a $b $c $d $e $g $k $t[3] $v[4]

---

[1] Seldom present.

[2] $t not in Author Analytic A.E. headings.

[3] Always present.

[4] Present if numbered series.

HEADING CONSTRUCTION SPECS (CONT.)

DATA ELEMENTS (CONT.)

CONDITION				ACTION
ENTRY TYPE	TAG(S)	IND.		SUBFIELDS (DELIMITERS) IN FILING ORDER
		1	2	
Author Connecting A.E./ Author-Title Connecting A.E.				
Personal	700	-	1	$a $d $c $b $k $t[1]
Corporate	710	-	1	$a $b $k $t[1]
Conference	711	-	1	$a $b $c $d $e $g $k $t[1]
Proper Names...	750	-	1	$a
Title M.E.				
Regular	245 w/0 100, 110, 111, 130	-	b	$a $b
Uniform	130	b	-	$a $t[1]
Title A.E.				
Traced Same	245 w/ 100, 110, 111, 130	1	b	$a $b
Traced Differently	730, 740	b	0,1,2	$a $t[1]; $a
Title Series A.E.	440, 840	b	b	$a $v[2]
Subject A.E.[3]				
Personal	600	-	-	$a $d $c $b $k $t $x $y $z
Corporate	610	-	-	$a $b $k $t $x $y $z
Conference	611	-	-	$a $b $c $d $e $g $k $t $x $y $z
Uniform Title	630	b	-	$a $t $x $y $z
Topical & Proper Names...	650	b	-	$a $x $y $z
Geographical	651	b	-	$a $x $y $z
Political	652	b	-	$a $x $y $z

---

[1] Seldom present.

[2] Present if numbered series.

[3] Any one or all of the subject subdivisions ($x, $y, $z) may be present in Subject A.E. headings.

HEADING CONSTRUCTION SPECS (CONT.)

PRECEDENCE CODES

Heading Form: Single Surname

CONDITION							ACTION
ENTRY TYPE	TAG(S)	IND.		DELIMITER(S)			PRECEDENCE CODE TO BE ASSIGNED[1]
		1	2	$c	$b	$k	
Personal	100, 400, 600, 700, 800	1	-	Y	N	N	1.1
		1	-	Y	N	Y	1.1
		1	-	Y	Y	N	1.1
		1	-	Y	Y	Y	1.1
		1	-	N	Y	Y	1.2
		1	-	N	Y	N	1.2
		1	-	N	N	Y	1.3
		1	-	N	N	N	1.0
Corporate[2]	110, 410, 610, 710, 810	0	-			Y	1.3
		0	-			N	1.0
Conference[2]	111, 411, 611, 711, 811	0	-		Y	Y	1.2
		0	-		Y	N	1.2
					N	Y	1.3
					N	N	1.0

---

[1] The precedence code in single surname headings is placed so that it replaces the first comma or left parenthesis in subfield $a.

[2] Occur infrequently.

HEADING CONSTRUCTION SPECS (CONT.)

PRECEDENCE CODES (CONT.)

Heading Form: Non-Single Surname

CONDITION							ACTION	
ENTRY TYPE	TAG(S)	IND.		DELIMITER(S)			PRECEDENCE CODE	PLACE AFTER SUBFIELD
		1	2	c	b	k		
Personal	100, 400, 600, 700, 800	0,2,3	-	Y	N	N	2.1	$a
		0,2,3	-	Y	N	Y	2.1	$a
		0,2,3	-	Y	Y	N	2.1	$a
		0,2,3	-	Y	Y	Y	2.1	$a
		0,2,3	-	N	Y	Y	2.2	$a
		0,2,3	-	N	Y	N	2.2	$a
		0,2,3	-	N	N	Y	2.3	$a
		0,2,3	-	N	N	N	2.0	$a
Corporate	110, 410, 610, 710, 810	1,2	-			Y	2.3	$b
		1,2	-			N	2.0	$b
Conference	111, 411, 611, 711, 811	1,2	-		Y	Y	2.2	$a
		1,2	-		Y	N	2.2	$a
		1,2	-		N	Y	2.3	$a
		1,2	-		N	N	2.0	$a
Proper Names Not Capable of Authorship	750	-	-				2.0	$a
Title	240/245, 130, 630, 730, 440, 740, 840	-	-				2.0	$a

HEADING CONSTRUCTION SPECS (CONT.)

FUNCTION CODES

CONDITION				ACTION
ENTRY TYPE	TAG(S)	IND.		FUNCTION CODE
		1	2	
Author M.E.				
Personal	100	-	-	1.0
Corporate	110	-	-	1.0
Conference	111	-	-	1.0
Author Alternate A.E./ Author-Title Alternate A.E.				
Personal	700	-	0	1.0
Corporate	710	-	0	1.0
Conference	711	-	0	1.0
Proper Names...	750	-	0	1.0
Author Analytic A.E.				
Personal	700	-	2	1.0
Corporate	710	-	2	1.0
Conference	711	-	2	1.0
Author-Title Series A.E.				
Personal	400, 800	-	0,1,b	1.0
Corporate	410, 810	-	0,1,b	1.0
Conference	411, 811	-	0,1,b	1.0

HEADING CONSTRUCTION SPECS (CONT.)

FUNCTION CODES (CONT.)

CONDITION				ACTION
ENTRY TYPE	TAG(S)	IND.		FUNCTION CODE
		1	2	
Author Connecting A.E. /				
Author-Title Connecting A.E.				
Personal	700	-	1	1.1
Corporate	710	-	1	1.1
Conference	711	-	1	1.1
Proper Names...	750	-	1	1.1
Title M.E.				
Regular	245 w/0 100, 110, 111, 130	-	b	2.0
Uniform	130	b	-	2.0
Title A.E.				
Traced Same	245 w/ 100 110, 111, 130	1	b	2.0
Traced Differently	730, 740	b	0,1, 2	2.0
Title Series A.E.	440, 840	b	b	2.1
Subject A.E.				
Personal	600	-	-	3.0
Corporate	610	-	-	3.0
Conference	611	-	-	3.0
Uniform Title	630	b	-	3.0
Topical	650	b	-	3.0
Geographical	651	b	-	3.0
Political	652	b	-	3.0

D. SUBORDER ARRANGEMENT.

The suborder specs consist of five decision tables, one for each alphabet/group (cf. function codes). The condition (specified by the entry type and MARC tags and indicators) determines the action, or suborder of the body of the entry. The tables give the action in the form of the field or subfield name and the MARC tags and delimiters.

Main entry suborder specs are given below in FILE Fig. 8 to eliminate the necessity of breaking down the suborder each time it appears on the following pages. There are five entry types in the main entry suborder: personal, corporate, or conference name; uniform title main entry; and title main entry.

MAIN ENTRY SUBORDER SPECS

ENTRY TYPE	TAG(S)	DELIMITER(S)
Personal,	100	\$a \$d \$c \$b \$k \$t[1]
Corporate,	110	\$a \$b \$k \$t[1]
Conference,	111	\$a \$b \$c \$d \$e \$g \$h \$k \$t[1]
Uniform Title M.E.,	130	\$a \$t[1]
Title M.E.,	245 w/o 100,110,111 130	\$a

FILE Fig. 8

---

[1] Seldom present.

SUBORDER ARRANGEMENT SPECS

ALPHABET/GROUP: 1.0

Composed of Entry Types: Author Main Entry
Author Alternate Added Entry
Author-Title Alternate Added Entry
Author Analytic Added Entry
Author-Title Series Added Entry
1. Unnumbered/Dated
2. Numbered

CONDITION				ACTION: SUBORDER BY		
		IND.				
ENTRY TYPE	TAG(S)	1	2	FIELD or SUBFIELD	TAG(S)	DELIMITER(S)
Author M.E.	100,110 111	-	-	Supplied Title[1]	240	$a
				Short Title	245	$a
				Date	260[2]	$c
Author Alternate A.E./	700,710 711,750	-	0	Supplied Title[1]	240	$a
Author-Title Alternate A.E.				Short Title	245	$a
				M.E.	See FILE Fig. 8	
Author Analytic A.E.	700,710 711	-	2	Title of Analytic	700,710 711	$t
				M.E.	See FILE Fig. 8	
				Short Title	245	$a

(cont. on next page)

---

[1] Seldom present.

[2] Or fixed field 008, character positions 7-10.

SUBORDER ARRANGEMENT SPECS (CONT.)

ALPHABET/GROUP: 1.0 (cont.)

CONDITION				ACTION: SUBORDER BY		
ENTRY TYPE	TAG(S)	IND. 1	IND. 2	FIELD or SUBFIELD	TAG(S)	DELIMITER(S)
Author-Title Series A.E.	400,410 411,800 810,811	-	0,1			
1. Unnumbered/Dated				M.E.	See FILE Fig. 8	
				Short Title	245	$a
2. Numbered				Number	400,410 411,800 810,811	$v
				M.E.	See FILE Fig. 8	
				Short Title	245	$a

SUBORDER ARRANGEMENT SPECS (CONT.)

ALPHABET/GROUP: 1.1

Composed of Entry Types: Author Connecting Added Entry
Author-Title Connecting Added Entry

CONDITION				ACTION: SUBORDER BY		
ENTRY TYPE	TAG(S)	IND. 1	IND. 2	FIELD or SUBFIELD	TAG(S)	DELIMITER(S)
Author Connecting A.E./	700,710, 711,750	-	1	M.E.	See FILE Fig. 8	
Author-Title Connecting A.E				Supplied Title	240	$a
				Short Title	245	$a

SUBORDER ARRANGEMENT SPECS (CONT.)

ALPHABET/GROUP: 2.0

Composed of Entry Types: Title Main Entry
Uniform Title Main Entry
Title Added Entry Traced Same
Title Added Entry Traced Differently

CONDITION				ACTION: SUBORDER BY		
ENTRY TYPE	TAG(S)	IND. 1	IND. 2	FIELD or SUBFIELD	TAG(S)	DELIMITER(S)
Title M.E.	245 w/o 100,110, 111	-	b	Remainder of Title Date	245 260[1]	$b $c
Uniform Title M.E.	130	b	-	Title	245	$a $b $c
Title A.E. Traced Same	245 w/ 100,110, 111,130	1	b	M.E.	See FILE Fig. 8	
Title A.E. Traced Differently	740,730	b	0,1 2	M.E.	See FILE Fig. 8	

---

[1] Or fixed field 008, character positions 7-10.

SUBORDER ARRANGEMENT SPECS (CONT.)

ALPHABET/GROUP: 2.1

Composed of Entry Types: Title Series Added Entry
1. Unnumbered/Dated
2. Numbered

CONDITION				ACTION: SUBORDER BY		
ENTRY TYPE	TAG(S)	IND. 1	IND. 2	FIELD or SUBFIELD	TAG(S)	DELIMITER(S)
Title Series A.E.	440,840	b	b			
1. Unnumbered/Dated				M.E. Supplied Title Short Title	See FILE Fig. 8 240 245	 $a $a
2. Numbered				Number M.E. Supplied Title Short Title	440,840 See FILE Fig.8 240 245	$v $a $b

SUBORDER ARRANGEMENT SPECS (CONT.)

ALPHABET/GROUP: 3.0

Composed of Entry Types: Subject Added Entries (personal, corporate, conference name; uniform title heading; topical; geographic; and political jurisdictions)

CONDITION				ACTION: SUBORDER BY		
ENTRY TYPE	TAG(S)	IND. 1	IND. 2	FIELD or SUBFIELD	TAG(S)	DELIMITER(S)
Subject A.E.						
Personal, Corporate, Conference Name	600,610, 611	-	-			
Uniform Title Heading	630	b	-			
Topical	650	b	-	M.E.	See FILE Fig. 8	
Geographical Names	651	b	-			
Political Jurisdiction	652	b	-			
				OR		
				Title		
				Supplied Title	240	$a
				Title	245	$a $b $c[1]
				Date	260[2]	$c

---

[1] Must include author statement.

[2] Or fixed field 008, character positions 7-10.

E. EDITING

Specifications for editing are given in the following templates. There is one template for each ALA rule pertaining to editing which will be implemented in this system. Rules which are being deferred are not included in the editing specs. (See Section II.D. for discussion.) The templates contain the following information:

1. Number and statement of the ALA rule.
2. Page number(s) in ALA Filing Rules where rule is discussed.
3. Basic MARC II tags used to identify data elements.
4. Basic MARC II indicators used to identify data elements.
5. Basic MARC II delimiters used to identify data elements.
6. Examples (information affected by editing is underlined)
7. Implementation: specifications for carrying out the computer edit.
8. Exceptions to the ALA rule.
9. References needed within the catalog to assist the user.
10. Discussion of problems which might arise.

The templates are separated into the two kinds of editing situations: disregard and file as. Within each group the templates are ordered alphabetically by the identifying phrase in the top center of the page.

FILE

EDITING SPECS

Disregard: Diacritics

ALA RULE: R2A - Disregard the modification of all letters. This includes umlauts, accents, diereses and other diacritical marks in foreign languages and dots, lines, etc.,above or below letters in romanization.

PAGE NO.: 3-4

BASIC MARC II TAG(S): Diacritics for Roman language may be identified by checking for all characters with a filing rank of zero. (See Collation Sequence Specs for list of diacritics.)

MARC II INDICATOR(S):

MARC II DELIMITER(S):

EXAMPLES:

ä, á, å file as a	ö, ő, ø file as o
ê files as e	ü files as u
ī files as i	

IMPLEMENTATION: In all entries check for characters with a filing rank of zero. (See Collation Sequence Specs.) When a character with a filing rank of zero is found, delete it and close up the text so as to remove the blank left by the deletion of the diacritic.

Note: The specs for editing (deleting) diacritics and punctuation are the same.

EXCEPTIONS: None.

NOTES: Modified letters file in the same relative order as non-modified letters.

DISCUSSION: In MARC a diacritic is a separate character from the letter which it modifies. Since this system will consider only Roman languages, the diacritics considered will be only for Roman languages.

Although a foreign word with diacritics may appear in an English entry, the vast majority of diacritics will appear in non-English entries.

EDITING SPECS (CONT.)

Disregard: Initial Article - Proper Names

ALA RULE:	R14D - Disregard initial article in nominative case at the beginning of proper names, e.g. corporate names and place names.
PAGE NO.:	75
BASIC MARC II TAG(S):	110, 410, 610, 710, 810; 111, 411, 611, 711, 811
MARC II INDICATOR(S):	Ind. 1 = 1,2
MARC II DELIMITER(S):	$a
EXAMPLES:	$aThe American Chemical Society. $aThe Bend, Ohio. $aThe Buttes, Montana
IMPLEMENTATION:	For all fields with the MARC II tags and indicator shown above, compare the first word in subfield $a with the words in the table of initial articles (attached to editing specs for initial articles in titles) which is language specific. If a match is made, the first word in subfield $a is disregarded in filing, and the sorting field is adjusted to reflect this.
EXCEPTIONS:	Nicknames, e.g.,"El Greco" file under initial article.
NOTES:	Initial articles in proper names at the beginning of a field are disregarded in filing.
DISCUSSION:	If the initial article is "Los" and the language is English ("eng" appears in field 008, positions 35-7), e.g.,"Los Angeles" or "Los Gatos," the initial article will not be dropped.

Disregard: Initial Articles - Titles

ALA RULE: R4A - Disregard an initial article in titles in the nominative case in all languages; this includes initial articles preceded by signs.

PAGE NO.: 9-12

BASIC MARC II TAG(S):

1) 100, 110, 111; 400, 410, 411; 600, 610; 700, 710, 711; 800, 810, 811
2) 245; 240, 440, 740, 840; 130, 630, 730

MARC II INDICATOR(S): Doesn't matter

MARC II DELIMITER(S):

1) $t
2) $a

EXAMPLES:

$aA moveable feast.
$aThe old man and the sea.
$aLe petit prince.
$aShakespeare. $tThe Tempest.

IMPLEMENTATION: For all fields with the MARC II tags and indicators shown above, compare the first word in subfield $t or $a, depending upon the tag, with the words in the table of initial articles. (The initial article table is language dependent.) If a match is made, the word immediately following $t or $a is disregarded in filing, and the address of the filing pointer is moved to the word immediately following the article.

EXCEPTIONS: Foreign articles compounded or declined, e.g. "du," "delle." Initial article "Los" if entry in English. Initial article "A" if title is "A B C," etc.

NOTES: Initial articles in titles will be disregarded in filing, including indefinite articles meaning "one," e.g., the French "un." (See discussion).

DISCUSSION: In English the articles are "A," "An" and "The." (A list of initial articles by language which are to be disregarded in filing is attached.)

Note: In many languages the form of the indefinite article is the same as that of the cardinal numeral "one," e.g., the French "un" or "une," the German "ein," or "eine," etc. All such initial indefinite articles will be considered articles and hence, disregarded. Therefore, a non-English title beginning with an indefinite article meaning "one," e.g., "Une des terres inconnues," will be filed on "des...."

EDITING SPECS (CONT.)

INITIAL ARTICLE TABLE
(Language Specific)

Language	Definite Article(s)	Indefinite Article(s)
English (eng)[+]	The	A, An
French (fre, fro)	Le, La, L', Les	Un,* Une*
German (ger)	Der, Die, Das	Ein,* Eine*
Italian (ita)	Il, La, Lo, I, Gli, Gl', Le, L'	Un,* Uno,* Una,* Un'*
Spanish (spa)	El, La, Lo, Los, Las	Un,* Una*

[+] The MARC II language code, located in positions 35-7 of field 008, is given in parentheses.

*After an indefinite article indicates that the same form is also used for the cardinal numeral "one," As indicated in the discussion under "Initial Article - Title Specs," this distinction will be disregarded.

Disregard: Non-numeric Info. in Date and Volume Subfields

ALA RULE: R20E3, 342 - Disregard all non-numeric information in the date subfield in personal entries and in the volume subfield in series entries.

PAGE NO.: 99; 195

BASIC MARC II TAG(S):

1) 100, 400, 600, 700, 800
2) 400, 410, 411, 440; 800, 810, 811, 840

MARC II INDICATOR(S): Doesn't matter

MARC II DELIMITER(S):

1) $d
2) $v

EXAMPLES:

$aSmith, John $dfl.1747

$aSMITH, JOHN $dd.1827

$aIts $tBulletin $vno.26

IMPLEMENTATION: When any combination of tags and delimiters given above is encountered check for non-numeric information within the designated subfield. Adjust the sorting field to disregard any non-numeric data in the subfield.

EXCEPTIONS: None.

NOTES: Non-numeric information is disregarded in date and volume subfields, e.g.,"Smith, John, d.1823," files before "Smith, John b.1826" because the d and b are disregarded in filing.

DISCUSSION:

FILE

EDITING SPECS (CONT.)

Disregard: Punctuation

ALA RULE: **R2D3** - Disregard all punctuation. (Slight variation from ALA wording.)

PAGE NO.: 8

BASIC MARC II TAG(S): Punctuation may be identified by checking all entries for characters with a filing rank of zero. (See Collation Sequence Specs for list of punctuation.)

MARC II INDICATOR(S):

MARC II DELIMITER(S):

EXAMPLES:

$aPiano Music, $xArranged

$aPiano Music, $xBibliography

$aPiano Music $x(Jazz)

IMPLEMENTATION: In all entries check for characters with a filing rank of zero. (See Collation Sequence Specs.) When a character with a filing rank of zero is found, delete it and close up the text so as to remove the blank left by the deletion of the punctuation.

See "Note" in implementation section of diacritics specs.

EXCEPTIONS:

NOTES: All punctuation is disregarded in filing. Thus, "Life!" interfiles with "Life."

DISCUSSION: The punctuation spec will cause all hyphenated words to file as a single word (since the hyphen is punctuation) and all acronyms with no space between letters or in upper case with a period but no space between letters to file as single word as required by the ALA Filing Rules. (See Section II, D. for discussion)

Note: It may not be necessary to check all entries for punctuation. The most important entries to check are subject, while the least important are titles.

File As: Arabic Numbers

ALA RULE: (Computer Rule) - Arabic numbers in identifiable number subfields, e.g., conference number and series volume number must be normalized.

Note: For computer filing of dates, the base year (i.e., year "zero") will be 10,000

PAGE NO.:

BASIC MARC II TAG(S):

1) 110, 410, 610, 710, 810; 111, 411, 611, 711, 811
2) 400, 410, 411, 440; 800, 810, 811, 840

MARC II INDICATOR(S):

MARC II DELIMITER(S):

1) $b
2) $v

EXAMPLES:

1) $aNobel Conference $b1st, $d1965
   $aU.S. $bArmy 101st Division.
   $aU.S. $b87th Congress. 2d Session. 1962 $bHouse.
   $aBell and Howell. $bMicro Photo Division (no number present)

2) $aSouthwestern Studies $v.v.1, no. 4

IMPLEMENTATION: In all fields tagged as listed above in which the corresponding numeric subfield occurs, normalize every number which occurs by adding it to 10,000. Then place it in the sort tag as a replacement for the number which was there previously.

Note: At least one number will be found in subfield $b of conference entries (tags 111, 411, 611, 711, 811) and subfield $v of series entries. There may be no number or several numbers in subfield $b of corporate entries (tags 110, 410, 610, 710, or 810). See examples of "U.S. 87th Congress..." and "Bell and Howell..." given above.

EXCEPTIONS: None needed since edit is for computer only.

NOTES:

DISCUSSION: Since the majority of corporate entries with numbers in subfield $b will be "U.S." entries, it may be advantageous to implement the Arabic number editing spec for only those corporate entries beginning with "U.S." in subfield $a.

It is doubtful that B.C. numbers will occur in corporate, conference or series entries.

File As: Author-Title Series Added Entries

ALA RULE: (Computer Rule) - In author-title series added entries the "His," "Its" or possessive (e.g.,Society's) at the beginning of subfield $a files as part of subfield $a,all of subfields $a or $b or all of subfields $a $b $c $d $e $g (depending whether it is a personal, corporate or conference entry) of the main entry.

PAGE NO.:

BASIC MARC II TAG(S): 400, 410, 411; 800, 810, 811

MARC II INDICATOR(S): Doesn't matter

MARC II DELIMITER(S): $a

EXAMPLES:

$aHis $tWorks $vv. 2

$aIts $tBulletin, $vno. 26

$aSociety's $tJournal $vno. 2

IMPLEMENTATION: In author-title series added entries check the first word in subfield $a for the character strings "His" or "Her" if it is a personal entry (tag 400 or 800) or the character strings "Its" or a possessive (e.g., society's) if it is a corporate or conference entry (tags 410, 411, 810, or 811).

Character string replacement rules:

1) If a personal entry (tag 400 or 800) is present, replace "His" or "Her" with that portion of MARC subfield $a of main entry (tag 100) which comes before the first mark of punctuation.

2) If a corporate entry (tag 410 or 810) is present, replace "Its" or any possessive with MARC subfields $a and $b or main entry (tag 110).

3) If a conference entry (tag 411 or 811) is present, replace "Its" or any possessive with MARC subfields $a $b $c $d $e and $g.

EXCEPTIONS: None.

NOTES: Author-title series added entries file on main entry, not on possessive pronoun (e.g., "His", "Her" or "Its") or possessive (e.g., "Society's").

DISCUSSION:

FILE

EDITING SPECS (CONT.)

File As: Dates

ALA RULE: (Computer Rule) - All dates (MARC subfield $d in personal and conference entries) must be normalized.

Note: For computer filing of dates, the base year (i.e., year "zero") will be 10,000.

PAGE NO.:

BASIC MARC II TAG(S): 100, 400, 600, 700, 800; 110, 411, 611, 711, 811

MARC II INDICATOR(S): Doesn't matter

MARC II DELIMITER(S): $d

EXAMPLES:

$aChaucer, Geoffrey, $dd1400.

$aParis. Peace Conference, $d1919.

$aShakespeare, William, $d1564-1616.

IMPLEMENTATION: Check the date subfield within the MARC II tags listed above for the character string "B.C." If present, subtract the number (or numbers) preceding "B.C." from 10,000. If not present, add the number or (numbers) in the subfield to 10,000. In either case place the resulting number(s) in the sort tag as a replacement for the original number(s).

Note: In the case of a number pair such as "953-586 B.C." both numbers of the pair are handled in the same manner; however, in the case of the number pair "586 B.C. - 70 A.D.," each number is handled differently.

EXCEPTIONS: None needed since editing is for the computer only

NOTES:

DISCUSSION: It seems doubtful that there will be a B.C. date in conference entries, and there will be very few in personal entries.

File As: M', Mc

ALA RULE:	R14B - Names beginning with the prefixes M' and Mc file as if written Mac.
PAGE NO.:	74-75
BASIC MARC II TAG(S):	1) 100, 400, 600, 700, 800. 2) 110, 410, 610, 710, 810; 111, 411, 611, 711, 811
MARC II INDICATOR(S):	1) Ind 1 = 1 2) Ind 1 = 0
MARC II DELIMITER(S):	$a
EXAMPLES:	$aMcCall's magazine $aMacCauley, Clay $aMacHugh, Augustin $aMcHugh, James $aMacLaren, Ian $aM'Laren, J.
IMPLEMENTATION:	Check the first two characters in subfield $a in the fields with the MARC II tags and indicators given above. If the characters M' or Mc are present, update the subfield so that the first three characters are Mac.
EXCEPTIONS:	None.
NOTES:	Names beginning with Mc or M' are filed as if spelled "Mac," e.g.,"McLaren" is filed as "MacLaren" and "M'Laren" is also filed as "MacLaren."
DISCUSSION:	This situation will occur most often in personal names (MARC II tags 100, 400, 600, 700, 800). It will seldom occur in corporate and conference names; in fact it may not be worthwhile to even look for the prefixes M' and Mc in non-personal names.

File As: Proper Names with Prefixes

ALA RULE:	R14A - Proper names with a prefix file as a single word. Prefixes include articles, prepositions, or terms which originally expressed relationship, with or without a space, hyphen or apostrophe between the prefix and name. For a comprehensive list of prefixes see ALA Filing Rules, p. 70.
PAGE NO.:	68-74
BASIC MARC II TAG(S):	100, 110, 111; 400, 410, 411; 600, 610, 611; 700, 710,711; 800, 810, 811
MARC II INDICATOR(S):	Ind 1 = 1,2
MARC II DELIMITER(S):	$a
EXAMPLES:	$aDelmar, Dora $aDel Mar, Eugene $aDelmas $aDe Lux $aDemocracy $aDe Morgan
IMPLEMENTATION:	Search subfield $a of proper personal names (tags indicated above) with indicator one equal to 1 or 2 (single surname or multiple surname). Remove all blanks which occur before the first comma.
EXCEPTIONS:	None.
NOTES:	Proper personal names with a prefix file as a single word, e.g. "La Crosse" files as "Lacrosse."
DISCUSSION:	This should be done after the editing for names beginning with M' or Mc.

File As: Roman Numerals in Numeration

ALA RULE: (Computer Rule) - Roman numerals in numeration subfields file as Arabic numbers.

PAGE NO.:

BASIC MARC II TAG(S): 100, 400, 600, 700, 800

MARC II INDICATOR(S):

MARC II DELIMITER(S): $b

EXAMPLES:

$aAlexander $bI $cEmperor of Russia, $d1777-1825
$aCharles $bII, $cKing of France
$aCharles $bI, $cKing of Great Britain (designation files before numeration)
$aCharles $bII, $cKing of Great Britain

IMPLEMENTATION: Check subfield $b in the personal name fields (as given above) for Roman numerals I to XXV (1-25). Using a table of two place Arabic numbers (see attached table), place the required Arabic number in the sort tag.

EXCEPTIONS: None.

NOTES: None needed since editing is for computer only.

DISCUSSION:

EDITING SPECS (CONT.)

ROMAN NUMERAL TABLE

ROMAN NUMERAL	ARABIC NUMBER (Normalized)
I	01
II	02
III	03
IV	04
V	05
VI	06
VII	07
VIII	08
IX	09
X	10
XI	11
XII	12
XIII	13
XIV	14
XV	15
XVI	16
XVII	17
XVIII	18
XIX	19
XX	20
XXI	21
XXII	22
XXIII	23
XXIV	24
XXV	25

F. COLLATION SEQUENCE

The collation sequence of all characters which may appear in the catalog data is given in the character table on the following pages. The table gives the character group, filing rank (collation sequence), graphic and name, as well as the decimal, hexidecimal and binary equivalents of each character. The characters are listed in filing rank order in the following groups:

1. Punctuation (filing rank=0)
2. Diacritics (filing rank=0)
3. Space (filing rank=1)
4. Numbers (filing rank=2-11)
5. Upper Case Letters (filing rank=12-37)
6. Lower Case Letters (filing rank=12-37)
7. Signs and Symbols (filing rank=38-52)
8. Ligatures (filing rank=single letter as shown)

This character table is patterned after the character table in the MARC II Subscriber's Guide (SG); however it does not include the numerous control characters listed in the SG table.

---

[1] As given in the table of extended 8-bit ASCII Character set in the Subscriber's Guide to the MARC distribution service, August 1968, pp. 5-15.

CHARACTER TABLE SHOWING COLLATION SEQUENCE

CHARACTER GROUP	FILING RANK	GRAPHIC	NAME	DEC.	HEX.	BINARY
Punctuation		!	Exclamation Point	33	21	0010 0001
	0	"	Quotation Marks	34	22	0010 0010
	0	'	Apostrophe	39	27	0010 0111
	0	(	Opening Parenthesis	40	28	0010 1000
	0	)	Closing Parenthesis	41	29	0010 1001
	0	,	Comma	44	2C	0010 1100
	0	-	Hyphen (Minus)	45	2D	0010 1101
	0	.	Period (Decimal Point)	46	2E	0010 1110
	0	:	Colon	58	3A	0011 1010
	0	;	Semi-Colon	59	3B	0011 1011
	0	?	Question Mark	63	3F	0011 1111
	0	[	Opening Bracket	91	5B	0101 1011
	0	]	Closing Bracket	93	5D	0101 1101
	0	·	Dot in Middle of Line	168	A8	1010 1000
Diacritics	0	`	Grave	225	E1	1110 0001
	0	´	Acute	226	E2	1110 0010
	0	^	Circumflex	227	E3	1110 0011
	0	~	Tilde	228	E4	1110 0100
	0	¯	Macron	229	E5	1110 0101
	0	˘	Breve	230	E6	1110 0110
	0	˙	Superior Dot	231	E7	1110 0111
	0	¨	Umlaut	232	E8	1110 1000
	0	ˇ	Hacek	233	E9	1110 1001
	0	˚	Circle or Angstrom	234	EA	1110 1010
	0	︠	Ligature	235	EB	1110 1011
	0	︡	Ligature	236	EC	1110 1100
	0	ʼ	High Comma Diacritical	237	ED	1110 1101
	0	˝	Double Acute	238	EE	1110 1110
	0	̐	Candrabindu	239	EF	1110 1111
	0	¸	Cedilla	240	F0	1111 0000
	0	˛	Right Hook	241	F1	1111 0001
	0	̣	Dot Below Character	242	F2	1111 0010

(cont. on next page)

CHARACTER TABLE (CONT.)

CHARACTER GROUP	FILING RANK	GRAPHIC	NAME	DEC.	HEX.	BINARY
Diacritics (cont.)	0	‥	Double Dot Below Character	243	F3	1111 0011
	0	∘	Circle Below Character	244	F4	1111 0100
	0	=	Double Underscore	245	F5	1111 0101
	0	_	Underscore	246	F6	1111 0110
	0	ˏ	Left Hook	247	F7	1111 0111
	0	¸	Right Cedilla	248	F8	1111 1000
	0	—	Upadhmaniya	249	F9	1111 1001
	0	~	Double Tilde	250	FA	1111 1010
	0	¨	Dieresis	252	FC	1111 1100
	0	,	High Comma (Centered)	254	FE	1111 1110
Space	1	b̸	Space (blank)	32	20	0010 0000
Numbers	2	0		48	30	0011 0000
	3	1		49	31	0011 0001
	4	2		50	32	0011 0010
	5	3		51	33	0011 0011
	6	4		52	34	0011 0100
	7	5		53	35	0011 0101
	8	6		54	36	0011 0110
	9	7		55	37	0011 0111
	10	8		56	38	0011 1000
	11	9		57	39	0011 1001
Upper Case Letters	12	A		65	41	0100 0001
	13	B		66	42	0100 0010
	14	C		67	43	0100 0011
	15	D		68	44	0100 0100
	16	E		69	45	0100 0101
	17	F		70	46	0100 0110
	18	G		71	47	0100 0111
	19	H		72	48	0100 1000
	20	I		73	49	0100 1001
	21	J		74	4A	0100 1010
	22	K		75	4B	0100 1011
	23	L		76	4C	0100 1100

(cont. on next page)

CHARACTER TABLE (CONT.)

CHARACTER GROUP	FILING RANK	GRAPHIC	NAME	DEC.	HEX.	BINARY
Upper Case Letters (Cont.)	24	M		77	4D	0100 1101
	25	N		78	4E	0100 1110
	26	O		79	4F	0100 1111
	27	P		80	50	0101 0000
	28	Q		81	51	0101 0001
	29	R		82	52	0101 0010
	30	S		83	53	0101 0011
	31	T		84	54	0101 0100
	32	U		85	55	0101 0101
	33	V		86	56	0101 0110
	34	W		87	57	0101 0111
	35	X		88	58	0101 1000
	36	Y		89	59	0101 1001
	37	Z		90	5A	0101 1010
Lower Case Letters	12	a		97	61	0110 0001
	13	b		98	62	0110 0010
	14	c		99	63	0110 0011
	15	d		100	64	0110 0100
	16	e		101	65	0110 0101
	17	f		102	66	0110 0110
	18	g		103	67	0110 0111
	19	h		104	68	0110 1000
	20	i		105	69	0110 1001
	21	j		106	6A	0110 1010
	22	k		107	6B	0110 1011
	23	l		108	6C	0110 1100
	24	m		109	6D	0110 1101
	25	n		110	6E	0110 1110
	26	o		111	6F	0110 1111
	27	p		112	70	0111 0000
	28	q		113	71	0111 0001
	29	r		114	72	0111 0010
	30	s		115	73	0111 0011
	31	t		116	74	0111 0100

(cont. on next page)

CHARACTER TABLE (CONT.)

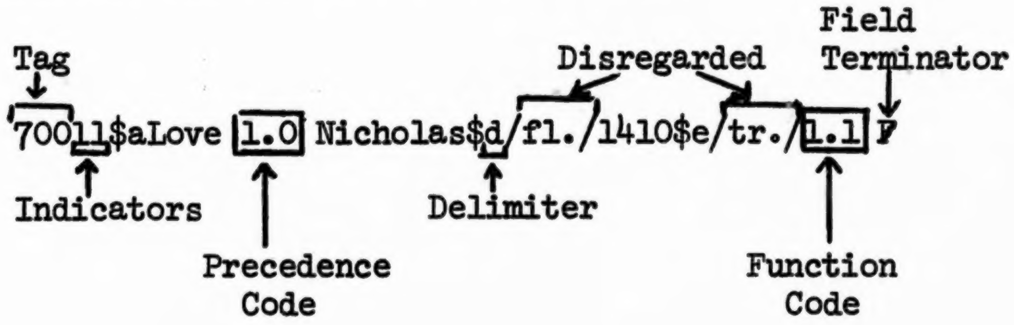
CHARACTER GROUP	FILING RANK	GRAPHIC	NAME	DEC.	HEX.	BINARY
Lower Case Letters (cont.)	32	u		117	75	0111 0101
	33	v		118	76	0111 0110
	34	w		119	77	0111 0111
	35	x		120	78	0111 1000
	36	y		121	79	0111 1001
	37	z		122	7A	0111 1010
Signs and Symbols	38	‡	Double Dagger (Delimiter)	31	1F	0001 1111
	39	#	Number Sign	35	23	0010 0011
	40	$	Dollar Sign	36	24	0010 0100
	41	&	Ampersand	38	26	0010 0110
	42	*	Asterisk	42	2A	0010 1010
	43	+	Plus	43	2B	0010 1011
	44	/	Slash	47	2F	0010 1111
	45	<	Less Than	60	3C	0011 1100
	46	=	Equals	61	3D	0011 1101
	47	>	Greater Than	62	3E	0011 1110
	48	@	Commercial At Sign	64	40	0100 0000
	49	♭	Musical Flat	169	A9	1010 1001
	50	R	Subscript Patent Mark	170	AA	1010 1010
	51	±	Plus or Minus	171	AB	1010 1011
	52	£	British Pound	185	B9	1011 1001
Ligatures	16	Æ	Files as "E"	165	A5	1010 0101
	16	Œ	Files as "E"	166	A6	1010 0110
	16	æ	Files as "e"	181	B5	1011 0101
	16	œ	Files as "e"	182	B6	1011 0110

APPENDIX:

Filing Examples

FILING EXAMPLES

The appendix consists of two comprehensive filing examples: London and Love.[1] For each example twenty-five headings with their respective MARC II tag, indicators and delimiter(s) are given in ALA filing order. The filing order was implemented manually by using the precedence and function codes (shown in boxes within the headings) and the collation sequence described in the chapter. Data disregarded in filing is delimited by slashes; data added for filing is delimited by parentheses; and all punctuation has been ommitted. For example:


Field Terminator
Tag
Disregarded
70011$aLove 1.0 Nicholas$d/fl./1410$e/tr./1.1 F
Indicators
Delimiter
Precedence Code
Function Code

On the page following each example there is a key which explains the type and function of each heading.

---

[1] Some of the headings have been invented for the purpose of illustration.

Filing Example: LONDON

1. 1001-$aLondon 1.1 b$cclockmaker 1.0 F
2. 70010$aLondon 1.0 Charmian$cMrs 1.0 F
3. 1001-$aLondon 1.0 Jack$d1876-1916 1.0 F
4. 70011$aLondon 1.0 Jack$d1876-1916 1.1 F
5. 6001-$aLondon 1.0 Jack$d1876-1916 3.0 F
6. 4001-$aLondon 1.0 Jack$d1876-1916$tWorks$vv1 1.1 F
7. 70010$aLondon 1.0 Joan 1.0 F
8. 2451b$aLondon 2.0 2.0 F
9. 1000-$aLondon 2.0 $b/IV/(04) 1.0 F
10. 2450b$aLondon 2.0 $ba guide to the public buildings 2.0 F
11. 652b-$aLondon$xAntiques 2.0 3.0 F
12. 2450b$aLondon as it is today 2.0 2.0 F
13. 1101-$aLondon$bBoard of Trade 2.0 1.0 F
14. 653b-$aLondon Bridge 2.0 3.0 F
15. 1101-$aLondon$bCentral Criminal Court 2.0 1.0 F
16. 6101-$aLondon$bCentral Criminal Court 2.0 3.0 F
17. 71012$aLondon Eng City $bCentral Criminal Court 2.0 1.0 F
18. 4101-$aLondon Eng City $bLibrary$tPublications$vno 20 2.0 2.0 F
19. 652b-$aLondon$xHistory$y/to/1600 2.0 3.0 F
20. 652b-$aLondon$xHistory$y/17th Century/(1600 Century) 2.0 3.0 F
21. 652b-$aLondon$xHistory$y/19th Century/(1800 Century) 2.0 3.0 F
22. 651b-$aLondon Park$xDescription 2.0 3.0 F
23. 1111-$aLondon Peace Conference 2.0 $d1930 1.0 F
24. 652b-$aLondon$xPoor 2.0 3.0 F
25. 440bb$aLondon University Series$vv1 2.0 2.1 F

Key To Filing Example: LONDON

1. Personal name (with designation) main entry.
2. Personal name (with designation) alternate added entry.
3. Personal name (with dates) main entry.
4. Personal name (with dates) alternate added entry.
5. Personal name (with dates) subject added entry.
6. Personal name/title (traced) series note added entry.
7. Personal name alternate added entry.
8. Title added entry.
9. Forename (with numeration) main entry.
10. Title main entry subordered by subtitle.
11. Political jurisdiction subject added entry.
12. Title main entry.
13. Corporate name main entry.
14. Proper name not capable of authorship subject added entry.
15. Corporate name main entry.
16. Corporate name subject added entry.
17. Corporate name analytic added entry.
18. Corporate name/title (traced) series added entry.
19. Political jurisdiction subject added entry.
20. Political jurisdiction subject added entry.
21. Political jurisdiction subject added entry.
22. Geographic name subject added entry.
23. Corporate name conference (with dates) main entry.
24. Political jurisdiction subject added entry.
25. Title (traced) series note added entry.

Filing Example: LOVE

1. 1100-$aLove 1.0 Albert D Inc 1.0 F
2. 1001-$aLove 1.0 John 1.0 F
3. 70011$aLove 1.0 John L 1.1 F
4. 6001-$aLove 1.0 John L 3.0 F
5. 1001-$aLove 1.0 John L$d1820-1866 1.0 F
6. 1001-$aLove 1.1 John L$cCaptain 1.0 F
7. 70011$aLove 1.0 Nicholas$d/fl./1410$e/tr./1.1 F
8. 1001-$aLove 1.0 Robert Merton$d1909- 1.0 F
9. 1001-$aLove 1.0 Robertus$d1876-1930 1.0 F
10. 1000-$aLove 2.0 1.0 F
11. 2450b$aLove 2.0 2.0 F
12. 2451b$aLove 2.0 $band other stories by... 2.0 F
13. 650b-$aLove 2.0 3.0 F
14. 2451b$aLove against hate 2.0 2.0 F
15. 2451b$aLove among the cannibals 2.0 2.0 F
16. 2451b$aLove in art 2.0 2.0 F
17. 650b-$aLove in art 2.0 3.0 F
18. 650b-$aLove in literature$zAfrica 2.0 3.0 F
19. 2451b$aLove is a many splendored thing 2.0 2.0 F
20. 650b-$aLove$xMaternal 2.0 3.0 F
21. 650b-$aLove$xPlatonic 2.0 3.0 F
22. 1002-$aLove-Powell 2.0 1.0 F
23. 2450b$aLove songs 2.0 $bOld and new 2.0 F
24. 650b-$aLove$xTheology 2.0 3.0 F
25. 2451b$aLove your neighbor 2.0 2.0 F

Key To Filing Example: LOVE

1. Corporate name (inverted) main entry.
2. Personal name main entry.
3. Personal name connecting added entry.
4. Personal name subject added entry.
5. Personal name (with dates) main entry.
6. Personal name (with designation) main entry.
7. Personal name (with dates) connecting added entry.
8. Personal name (with dates) main entry.
9. Personal name (with dates) main entry.
10. Forename main entry.
11. Title main entry.
12. Title added entry subordered by subtitle.
13. Subject added entry.
14. Title added entry.
15. Title added entry.
16. Title added entry.
17. Subject added entry.
18. Subject (with place subdivision) added entry.
19. Title added entry.
20. Subject (with general subdivision) added entry.
21. Subject (with general subdivision) added entry.
22. Compound surname main entry.
23. Title main entry subordered by subtitle.
24. Subject (with general subdivision) added entry.
25. Title added entry.

FORMAT FOR BOOK CATALOG

Containing specifications of entry formats
and page layouts for book catalogs.

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INTRODUCTION

From the user's point of view the most important choice with respect to book form catalogs appears to be the functional division: dictionary, author/title, subject, etc. However, that is only the beginning, because there is an extensive set of variations available within the areas of:

1. Data elements (include, exclude or re-arrange)
2. Data element formats (punctuation, line position)
3. Entry formats (indentation, sequence of data elements)
4. Headings (print or suppress)
5. Entry groupings (according to bibliographic function)
6. Page layout (column width and length)

Since we are not dealing here with the traditional ALA or AA defined catalog card format, a method must be created for specifying the parameters required in the six areas outlined above.

What will be specified within this chapter will be our recommendation for a "standard" Processing Center format. A liberal use of samples will be made to provide a graphic illustration of the parameters being specified; see especially FORM Fig. 8: Alphabet Group Samples. The method of specification used is tables with various levels of detail, each designed to provide specifications for some significant area of variation.

The chapter is organized in the following manner. Section I is a set of sample book catalog pages to display features of entry and page layout in existing or proposed book catalogs. Section II presents the types of entries to be included in the book form catalog arranged by bibliographic function, a listing of the major elements in a catalog entry, and a set of sample main entries. Section III is a set of tables displaying in detail the format controls for creation of each type of entry and represents our recommendation for the basic format. Section IV presents a heading suppression algorithm and the continuation and indentation structure of entries. Section V discusses page lay-out.

Topics not included in this chapter but which merit further consideration include additional output options as a support to cataloging services. The capabilities of the system should be examined for the production of 3"x5" catalog cards from the same bibliographic input used to generate the book catalog. Also to be considered is a set of format specifications for shelf lists, supplements, and authority files that would be incorporated into the system. The amount of cataloging information in the entries for these products could range from brief to complete (including tracings).

I. BOOK CATALOG PAGE SAMPLES

This section presents a set of sample pages from existing or proposed book form catalogs. The samples are of interest for their widely varying styles of entry form and page lay-out, e.g., spacing of column width, column length, central margin(s), indentations, entry separation, capitalization, bibliographic completeness of the entry, and arrangement of data elements. Preceding each sample is a table identifying the sample and listing in outline form some of the features of page layout. Where possible, the equipment used has been noted. Entry formatting is discussed in Section II; Section V contains further details on page formatting.

At the end of the section are sample pages from two shelf-lists--Harvard's Widener Library and Stanford's Meyer Library. Although the main emphasis of the chapter is book catalog formatting, the flexibility of the system is such that there are a host of other formatting functions possible within the system ranging from master file printout to subject authority file printout complete with tracings and a record of references made.

SAMPLE CATALOG PAGES

The pages were selected from Kelley L. Cartwright and Roy B. Torkington's "Sample Book Catalog Pages" collected for the University of Oregon Workshop on Library Mechanization, June 10-15 & July 15-20, 1968.

The following samples are reproduced in such a manner as to preserve the type size of the originals.

* * *

Samples 1-2:

STANFORD UNIVERSITY UNDERGRADUATE LIBRARY. Catalog, 1966. Upper- and lower case computer printout.

Sample 1: Author-Title Catalog
Sample 2: Subject Catalog

Sample 3:

FLORIDA ATLANTIC UNIVERSITY LIBRARY. Author catalog, 1964. Upper- and lower-case computer printout.

Samples 4-5:

BALTIMORE COUNTY PUBLIC LIBRARY. Catalog, 1966. Upper- and lower-case computer printout.

Sample 4: Author Catalog
Sample 5: Subject Catalog

Samples 6-8:

OREGON STATE LIBRARY. Master Book Catalog, September, 1967. Computer-driven phototypesetting.

Sample 6: Author Catalog
Sample 7: Title Catalog
Sample 8: Subject Catalog

FORM Fig. 1

STANFORD UNIVERSITY UNDERGRADUATE LIBRARY: Catalog, 1966

Sample 1: Author-Title Catalog
Sample 2: Subject Catalog*

Typography Equipment

Upper- and lower-case computer printout

Page Layout

Characters per column:	45
Columns per page:	2
Column width and length:	45 characters x 80 lines
Entry separation:	1 line
Central margin:	8 characters
Indentations in the entry:	entry headings flush left, all subsequent lines indented 2 spaces, call number flush right
Heading suppression:	yes
"Head and foot" notes:	considered unnecessary
Running heads:	across top
Paging:	centered at bottom
Size of page:	8 1/2"x 11"
Printed page length in lines:	84
Percent of reduction:	68%
Splitting of entries between columns:	not done
Repeated entry headings on columns:	yes

Equipment

-IBM 1401 Computer (12K storage, 4 tape drives)

-An expanded print chain on the 1403 Printer

-An 029 Card Punch

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*Note that Stanford's Subject Catalog is subarranged by title rather than author under a subject heading.

FORM

SAMPLE 1

Horn, Paul V.
International trade principles and practices, by Paul V. Horn and Henry Gomez. 4th ed. Prentice-Hall, 1961. 597 p.
HF1007.H63

Horn, Robert A.
Groups and the Constitution. Stanford Univ. Press, 1956. 187 p. AS36.L54

Horn, Stanley F.
The Robert E. Lee reader. Edited by Stanley F. Horn. Bobbs-Merrill, 1949. 542 p.
E467.1.L4H77

Horn, Stephen
The Cabinet and Congress. Columbia Univ. Press, 1960. 310 p. JK616.H6

Hornbein, Thomas F.
Everest: the west ridge. Photographs from the American Mount Everest Expedition and by its leader, Norman G. Dyhrenfurth. Introd. by William E. Siri. Edited by David Brower. Sierra Club, 1965. 198 p., illus.
DS486.E8H54 Folio

Hornblow, Arthur
The captive, by Edouard Bourdet. Translated by Arthur Hornblow, Jr. Introd. by J. Brooks Atkinson. Brentano's, 1926. 255 p.
PQ2603.U777P72

The triumph of death, by Gabriele d'Annunzio. Translated by Arthur Hornblow. Introd. by Burton Rascoe. Boni and Liveright, 1923. 412 p. PQ4803.Z3T7

Horne, Alistair
The price of glory: Verdun 1916. St. Martin's Press, 1963. 371 p. D545.V3H6

Return to power; a report on the new Germany. Praeger, 1956. 415 p.
DD259.4.H65

Horne, C. Silvester
Puritanism and art; an inquiry into a popular fallacy. By Joseph Crouch. Introd. by the Rev. C. Silvester Horne. Cassell, 1910. 381 p. N72.C8

Horned moon; an account of a journey through Pakistan, Kashmir, and Afghanistan. By Ian Stephens. Indiana Univ. Press, 1955. 288 p. DS377.S8

Horner, Harlan Hoyt
Lincoln and Greeley. Univ. of Illinois Press, 1953. 432 p. E457.2.H79

Horney, Karen
[Works. 1964.]
The collected works of Karen Horney. W.W. Norton, 1942-64. 2 v.
Contents.- v.1. The neurotic personality of our time.- v.2. Self-analysis RC435.H6

Neurosis and human growth; the struggle toward self-realization. W.W. Norton, 1950. 391 p. RC343.H648

The neurotic personality of our time. W.W. Norton, 1937. 299 p. RC343.H75

New ways in psychoanalysis. W.W. Norton, 1939. 313 p. BF173.H762

Horney, Karen
Our inner conflicts; a constructive theory of neurosis. W.W. Norton, 1945. 250 p.
RC343.H66

Horngren, Charles T.
Cost accounting; a managerial emphasis. Prentice-Hall, 1964. 801 p. HF5686.C8H59

Hornik, Henri
Le temple d'honneur et de vertus, par Jean Lemaire de Belges. Ed. critique publiée par Henri Hornik. Droz, 1957. 136 p.
PQ1628.L5T4

Horodisch, Abraham
Picasso as a book artist. World Pub. Co., 1962. 136 p. NC247.P5H63

Horonjeff, Robert
The planning and design of airports. McGraw-Hill, 1962. 464 p. TL725.3.P5H6

Horowitz, David
Student. Ballantine Books, 1962. 160 p.
LD760.H6

Horowitz, Irving Louis
The idea of war and peace in contemporary philosophy. With an introductory essay by Roy Wood Sellars. Paine-Whitman, 1957. 224 p. JX1952.H72

The new sociology; essays in social science and social theory in honor of C. Wright Mills. Edited by Irving Louis Horowitz. Oxford Univ. Press, 1964. 512 p. H35.H68

Radicalism and the revolt against reason; the social theories of Georges Sorel, with a translation of his essay on The decomposition of Marxism. Humanities Press, 1961. 264 p. HX263.S6H5

Revolution in Brazil; politics and society in a developing nation. E.P. Dutton, 1964. 430 p. F2538.2.H6

Horrabin, J.F.
An atlas of Africa. 2d, rev. ed. F.A. Praeger, 1961. 126 p. G2445.H6

Mathematics for the million, by Lancelot Hogben. Illustrations by J.F. Horrabin. W.W. Norton, 1937. 647 p. QA36.H6

Horrocks, John E.
The psychology of adolescence: behavior and development. 2d ed. Houghton, 1962. 711 p. BF724.H6

Horrocks, N.K.
Physical geography and climatology. With a foreword by S.W. Wooldridge. 2d ed. Longmans, 1964. 370 p. GB55.H77

The horse and buggy doctor, by Arthur E. Hertzler. Harper, 1938. 322 p.
R154.H39A3

The horse and his boy, by C.S. Lewis. Macmillan, 1965. 191 p. P[illegible]3.E926H6

The horse and the sword, by He[illegible] and Herbert John Fleure. Yale [illegible], 1933. 152 p. [illegible]21.P4

The horse in America, by Robert [illegible]oward. Follett, 1965. 298 p. QL737.U6H6

SAMPLE 2

CROMWELL, OLIVER

Oliver Cromwell and the rule of the Puritans in England. By Sir Charles Firth. With an introd. by G.M. Young. Oxford Univ. Press, 1961. 488 p. DA426.F52

CROMWELL, THOMAS

Thomas Cromwell and the English Reformation, by A.G. Dickens. English Universities Press, 1959. 192 p. DA334.C9D5

CRONIN, A.J.

Adventures in two worlds, by A.J. Cronin. Little, Brown, 1952. 331 p. PR6005.R68A4

CROSS, MARIAN EVANS

See Eliot, George, pseud.

CROW INDIANS

Crow Indian beadwork; a descriptive and historical study. By William Wildschut and John C. Ewers. Museum of the American Indian, Heye Foundation, 1959. 55 p., illus. E99.C92W5

The Crow Indians, by Robert Lowie. Farrar & Rinehart, 1935. 350 p. E99.C92L913

The religion of the Crow Indians, by Robert H. Lowie. American Museum of Natural History, 1922. 309-444 p. E99.C92L6

CROWDS

The crowd; a study of the popular mind. By Gustave Le Bon. T. Fisher Unwin, 1917. 239 p. HM281.L5

The crowd in history; a study of popular disturbances in France and England, 1730-1848. By George Rude. J. Wiley, 1964. 281 p. HM283.R8

The crowd in the French Revolution, by George Rudé. Clarendon Press, 1961. 267 p. DC158.8.R8

The psychology of social movements, by Hadley Cantril. J. Wiley, 1941. 274 p. HM291.C3

CRUSADES

An Arab-Syrian gentleman and warrior in the period of the crusades; memoirs of Usamah Ibn-Munqidh. Translated from the original manuscript by Philip K. Hitti. Columbia Univ. Press, 1929. 265 p. DS97.U5

Background to the Crusades, a BBC publication. British Broadcasting Corporation, n.d. 38 p. D159.B7

The crusades, by Richard A. Newhall. Rev. ed. Holt, Rinehart and Winston, 1964. 136 p. D158.N4

The Crusades;, iron men and saints. By Harold Lamb. Doubleday, Doran, 1930. 368 p. D157.L3

The Crusades; the story of the Latin Kingdom of Jerusalem. By T.A. Archer and Charles L. Kingsford. G.P. Putnam, 1936. 467 p. D158.A67

A history of the Crusades, by Steven Runciman. Cambridge, Eng., Univ. Press, 1957. 3 v. D157.R8

CRUSADES

The kingdom of the crusaders, by Dana Carleton Munro. D. Appleton, 1935. 216 p. D182.M8

The recovery of the Holy Land, by Pierre Dubois. Translated with an introduction and notes by Walther I. Brandt. Columbia Univ. Press, 1956. 251 p. D152.D813

CRUSADES--HISTORY

A history of the Crusades. Editor-in-chief, Kenneth M. Setton. Univ. of Pennsylvania Press, 1958-
Library has v.1-2. D157.S48

CRUSADES--FIRST, 1096-1099

The first crusade; the accounts of eye-witnesses and participants. P. Smith, 1958. 299 p. D161.1.A3K7

Gesta Francorum et aliorum Hierosolimitanorum. The deeds of the Franks and the other pilgrims to Jerusalem. Edited by Rosalind Hill; introd. by R.A.B. Mynors. T. Nelson, 1962. 103, 103 p.
In Latin and English. D161.1.G4

CRUSADES--SECOND, 1147-1149

De profectione Ludovici VII in orientem, edited, with an English translation by Virginia Gingerick Berry. Columbia Univ. Press, 1948. 154 p. D162.1.O3

CRUSADES--FOURTH, 1202-1204

Memoirs of the Crusades, by Geffroi de Villehardouin and Jean de Joinville. Translated by Frank T. Marzials. J.M. Dent; E.P. Dutton, 1933. 340 p. D164.A3V4

CRUSADES--SEVENTH, 1248-1250

Memoirs of the Crusades, by Geffroi de Villehardouin and Jean de Joinville. Translated by Frank T. Marzials. J.M. Dent; E.P. Dutton, 1933. 340 p. D164.A3V4

CRYOGENICS

See Low temperature research; Low temperatures.

CRYSTAL OPTICS

The microscopical characters of artificial inorganic solid substances: optical properties of artificial minerals. By Alexander Newton Winchell and Horace Winchell. 3d ed. Academic Press, 1964. 439 p. QE367.W78

Optical crystallography, with particular reference to the use and theory of the polarizing microscope. By Ernest E. Wahlstrom. 3d ed. J. Wiley, 1962. 365 p. QD941.W28

Practical optical crystallography, by N.H. Hartshorne and A. Stuart. American Elsevier Pub. Co., 1964. 326 p. QD941.H34

CRYSTALLIZATION

Crystallization; theory and prac By
Andrew Van Hook. Reinhold, 19 p.
.V3

CRYSTALLOGRAPHY

Crystal orientation manual, by h A.
Wood. Columbia Univ. Press, 196 5 p.
QD905.W58

FORM Fig. 2

FLORIDA ATLANTIC UNIVERSITY LIBRARY: *Catalog*, 1964

Sample 3: Author Catalog

Typography Equipment

Upper- and lower-case computer printout

Page Layout

Characters per column: 45

Columns per page: 3

Column width and length: 40 characters x at least 102 lines

Entry separation: 1 line

Central margins: 6 spaces

Indentations in the entry: heading flush left, first line of title and first line of imprint field indented 3 spaces; all subsequent lines and call number flush left.

Heading suppression: no

"Head and foot" notes: no

Running heads: centered at top

Paging: above third column at top of page

Size of page: 8 1/2" x 11"

Printed page length in lines: at least 108 lines

Splitting of entries between columns: not done

Repeated entry headings on columns: yes

Note that added entries were created by over printing the added entry heading with relator (e.g., joint author) in upper- and lower-case above the regular main entry, cf. CHANAL, Hubert, *joint author* and Cheo, Yuan-jen, 1892- *joint ed*.

FLORIDA ATLANTIC UNIVERSITY LIBRARY

AUTHOR CATALOG

CHAMBERLAIN, Laurence Henry, 1906-
Loyalty and legislative action; a survey and activity by the New York State Legislature, 1919-1949.
Ithaca, Cornell University Press, 1951. 254 p. (Cornell studies in civil liberty)
JC599.U52N52

CHAMBERLIN, Edward, 1899-
The theory of monopolistic competition; a re-orientation of the theory of value. 8th ed.
Cambridge, Harvard University Press, 1962. 396 p. (Harvard economic studies, v. 38)
HB201.C5 1962

CHAMBERLIN, Edward, 1899-
Towards a more general theory of value.
New York, Oxford University Press, 1957. 318 p.
HB201.C52

Chamberlin, Edward Hastings, 1899-
see
CHAMBERLIN, Edward, 1899-

Chamberlin, Edward Hastings, 1899-
see
CHAMBERLIN, Edward, 1899-

CHAMBERLIN, Mary W
Guide to art reference books.
Chicago, American Library Association, 1959. 418 p.
Z5931.C45

CHAMBERLIN, Waldo, 1905-
A chronology and fact book of the United Nations, 1941-1961 [by] ee [and] Thomas Hovet. With a pref. by Andrew W. Cordier.
New York, Oceana Publications, 1961. 64 p.
JX1977.C462

CHAMBERLIN, William Henry, 1897-
America's second crusade.
Chicago, Regnery, 1950. 372 p.
D753.C55

CHAMBERLIN, William Henry, 1897-
The evolution of a conservative.
Chicago, Regnery, 1959. 295 p.
PN4874.C37A32

CHAMBERLIN, William Henry, 1897-
A false Utopia: collectivism in theory and practice.
London, Duckworth [1937] 264 p.
Also published as Collectivism, a false Utopia.
HX86.C36 1937a

CHAMBERLIN, William Henry, 1897-
Russia's iron age.
Boston, Little, Brown, 1934. 400 p.
DK267.C49 1937

CHAMBERLIN, William Henry, 1897-
The Russian revolution, 1917-1921.
New York, The Macmillan company [c1935] 2 v.
DK265.C43

CHAMBERS, Sir Edmund Kerchever, 1866-1954.
Shakespeare: a survey.
London, Sidwick + Jackson [1958] 325 p.
PR2976.C35

CHAMBERS, Jonathan David, 1898-
The Vale of Trent, 1670-1800; a regional study of economic change.
London, New York, Published for the Economic History Society by Cambridge University Press [1957] 63 p. (The Economic history review supplements, 3)
HC257

CHAMBERS, Raymond Wilson, 1874-1942.
Beowulf; an introduction to the study of the poem with a discussion of the stories of Offa and Finn. With a supplement by C. L. Wrenn. 3d ed.
Cambridge [Eng.] University Press, 1959. 628 +.
PR1585.C5 1959

CHAMBERS, Whittaker.
Witness.
New York, Random House [1952] 808 p.
E743.5C47

Chamblain de Marivaux, Pierre Carlet de, 1688-1763.
see
MARIVAUX, Pierre Carlet de Chamblain de 1688-1763.

CHAMPNEYS, Mrs. Mary C.
An English bibliography of examinations (1900-1932); with a foreword by Sir Michael Sadler and Sir Philip Hartog.
London, Macmillan and co., limited, 1934. 140 p.
Z5814.E9C4

CHAN, Edmund Nathaniel, 1906-
The predicament of democratic man.
New York, Macmillan, 1961. 194 p.
JC423.C23

CHANAL, Hubert, joint author
STARCHUK, Orest.
Essentials of scientific Russian, by ee and H. Chanal.
Reading, Mass., Addison-Wesley Pub. Co. [1963] 300 p.
PG2120.S357

CHANDLER, Albert Richard, 1884- ed.
The clash of political ideals; a source book on democracy and the totalitarian state, selected and annotated by ee . 3d ed., with annotated bibliography.
New York, Appleton-Century-Crofts [1957] 374 p.
JA36.C48 1957

CHANDLER, Bobby Joe, 1925- g.d.
Education in urban society. Ed. by ee, Lindley J. Stiles [and] John I. Kitsuse.
New York, Dodd, Mead, 1962. 279 p.
LC5015.C45

CHANDLER, Bobby Joe, 1925-
Personnel management in school administration; [by] ee [and] Paul V. Petty. Yonkers-on-Hudson, N.Y., World Book Co. [1955] 598 p.
LB2831.5.C45

CHANDLER, Frank Wadleigh, 1873-1947.
The literature of roguery.
New York, B. Franklin, 1958 [1907] 2 v. (The Types of English literature) Burt Franklin bibliographical series no. 9)
PN3430.G6C5 1958

CHANDLER, Henry Bramwell, 1897-
A regional library and its readers; a study of five years of rural reading, by ee and J.T. Croteau.
New York, American association for adult education, 1940. 136 p.
Z736.C48C5

CHANDLER, Richard Eugene, 1916-
A new history of Spanish literature; [by] ee [and] Kessel Schwartz.
Baton Rouge, Louisiana State University Press [1961] 696 p.
PQ6033.C45

CHANDRASEKHAR, Sripati, 1917-
China's population, census and vital statistics. 2d ed., rev. and enl.
Hong Kong, Hong Kong University Press, 1960. 73 p.
HB3637.C4 1960

CHANDRASEKHAR, Sripati, 1917-
Red China; an Asian view.
New York, Praeger [1961] 230 p.
DS777.52.C34

Chang, Carsun, 1886-
see
CHANG, Chia-sên, 1886-

CHANG, Chia-sên, 1886-
The development of Neo-Confucian thought, by Carsun Chang.
New York, Bookman Associates [c1957] 376 p.
[illegible]

CHANG, Hsin-chang.
Allegory and courtesy in Spenser; a Chinese view.
Edinburgh, University Press, 1955. 227 p. (Edinburgh University publications; language + literature, no. 8)
PR2358.C5

CHANG, Jên-chi.
Pre-communist China's rural school and community.
Boston, Christopher Pub. House [1960] 116 p.
LC5148.C6C45

CHANG TSE-CHUN.
Cyclical movements in the balance of payments.
Cambridge, University Press, 1951. 223 p.
HF1014.C45

The CHANGING environment of international relations [by] Grayson Kirk [and others]
Washington, Brookings Institution, 1956. 158 p. (Brookings lectures, 1956)
JX1395.C47

Chantal, Marie de Rabutin, marquise de Sévigné, 1626-1696.
see
SEVIGNE, Marie (de Rabutin Chantal) marquise de, 1626-1696.

CHANTRENNE, H
The biosynthesis of proteins.
Oxford, New York, Pergamon Press, 1961. 220 p. (International series of monographs on pure and applied biology. Modern trends in physiological sciences, v. 14)
QP551.C47

Chao, Yüan-jên, 1892- joint ed.
MATHEWS, ROBERT HENRY.
Mathews' Chinese-English dictionary. Rev. American ed.
(Published for the Harvard-Yenching institute.) Cambridge, Mass., Harvard university press [1960] 1226 p.
PL1455.M34 1943

CHAPANIS, Alphonse Robert Everyste.
Applied experimental psychology; human factors in engineering design [by] ee, Wendell R. Garner [and] Clifford T. Morgan.
New York, Wiley, 1949. 434 p.
TA153.C5

CHAPEL, Charles Edward, 1904-
Field, skeet, and trapshooting. Rev. ed.
New York, Barnes [1962] 291 p.
GV1153.C5 1962

CHAPIN, Henry.
The Ocean River, by ee and F.G. Walton Smith.
New York, Scribner, [1962] 325 p.
GC296.G9C45

CHAPLIN, James Patrick, 1919-
Systems and theories of psychology [by] ee [and] T. S. Krawiec.
New York, Holt, Rinehart, and Winston [1960] 473 p.
BF108.U5C5

CHAPMAN, Agatha L
Wages and salaries in the United Kingdom, 1920-1938.
Cambridge, University Press, 1953. 253 p. (Studies in the national income and expenditure of the United Kingdom, 5
HC260.I5S4 no.5

CHAPMAN, George, 1559?-1634.
[Works, dramatic. Selections. English. Parrott]
The comedies. Ed. w' 1. and notes by Thomas Marc
New York, Russell + 61. 2 v.
PR2442.P3

CHAPMAN, Guy.
Beckford.
London, R. Hart-Davis, 1952. 365 p.
PR4092.C5 1952

FORM Fig. 3

BALTIMORE COUNTY PUBLIC LIBRARY: Catalog, 1966

Sample 4: Author Catalog
Sample 5: Subject Catalog

Typography Equipment

Upper- and lower-case computer printout

Page Layout

Characters per column: 50

Columns per page: 2

Column width and length: 50 characters x 85 lines

Entry separation: no separation

Central margins: 12 spaces

Indentations in the entry: entry heading flush left, remainder of entry indented 2 spaces, accession number indented 4 spaces, and call number flush right.

Heading suppression: yes

"Head and foot" notes: name of first author on the page only

Running heads: the name of the catalog is given but not the name of the library

Paging: centered at bottom

Size of page: 8 1/2" x 11"

Printed page length in lines: 88 lines

Percent of Reduction: indeterminable

Splitting of entries between columns: entries can be split at any line

Repeated entry headings on columns: no

SAMPLE 4 FORM

64010030 133.03 A
ABBOT, CHARLES GREELEY
Adventures in the world of science. 1958
(Autobiographical)
64010031 B A
ABBOT, WALDO
Handbook of broadcasting; the fundamentals of
radio and television 4th ed. 1957
64010032 621.384 A 1957
ABBOTT, ANDREW
Key to better memory. 1959
64010033 154 A
ABBOTT, ARTHUR LAURIE
National electrical code handbook. 10th ed.
1960
64010035 621.3 A 1960
National electrical code handbook. 11th ed.
1963
64010034 Ref 621.3 A 1963
ABBOTT, ASHLEY
Creative figure photography. 1960
64010036 778 A
ABBOTT, BERENICE
World of Atget, by Berenice Abbott. 1964
66021090 779 A
ABBOTT, EDITH
Some American pioneers in social welfare. 1937
64010037 920 A
ABBOTT, EDWIN ABBOTT
Flatland. 5th rev. ed. 1963.
66014138 513 A 1963
Flatland. 6th ed. rev. 1952
64010038 513 A 1952
ABBOTT, FRANK FROST
Common people of ancient Rome. 1911.
66017179 913.37 A
History and description of Roman political
institutions. 3d ed. 1911.
66014174 354.37 A
Roman politics. 1963
64010039 354.37 A
ABBOTT, GEORGE
Damn Yankees. 1956
64010040 812 A
Mister Abbott. 1963
64010041 B A
New girl in town. 1958
64010042 812 A
Pajama game. 1954
64010043 812 A
ABBOTT, JACOB
Harper establishment. 1855
65017942 Ref 655.1 A
ABBOTT, JOHN STEVENS CABOT
History of Maine. 1875
66021004 974.1 A
ABBOTT, PERCIVAL WILLIAM HENRY
Teach yourself algebra. 1942
64010044 512 A
Teach yourself calculus. 1959
64010045 517 A
Teach yourself geometry. 1948
64010046 513 A
Teach yourself mechanics. 1941
64010047 531 A
Teach yourself trigonometry. 1940
64010048 514 A
ABBOTT, ROBERT
New card games. 1963
64010049 795.4 A
ABBOTT, ROBERT TUCKER
American seashells. 1954
64010050 594 A
Introducing seashells. 1955
64010052 594 A
ABBOTT, WALTER M.
Twelve council fathers. 1963
64010053 262.5 A
ABBOTT, WILBUR CORTEZ
New York in the American Revolution. 1929
64010054 974.71 A
ABDALLAH, MARY C.
Nurse's aide study manual. 1965
65019622 610.73 A
ABDILL, GEORGE B.
Civil War railroads. 1961
64010055 973.79 A
Locomotive engineer's album. 1965
66021005 385 A
This was railroading. 1958
64010056 385 A
ABE, KOBO
Face of another. 1966
66019326
Woman in the dunes. c1964
65010004
ABFL, ALAN
Great American hoax. 1966.
66017632 817 A
ABEL, CHARLES
Photography, careers and opportunities for you.
1961
64010057 770 A
ABFL, DARREL
American literature 1963 3v.
64010058 810.9 A
Simplified approach to Herman Melville. c1964
65010005 813 M
Simplified approach to Mark Twain. c1964
65010006 813 C
Simplified approach to Walt Whitman. c1964
65010007 811 W
ABEL, ELIE
Missile crisis. 1966.
66012135 973.922 A
ABEL, LIONEL
Metatheatre, a new view of dramatic form. 1963
64010059 809.2 A
ABFL, OSCAR R.
Mechanism of the linotype and intertype. 1950
64010060 655.2 A
ABFL-SMITH, BRIAN
History of the nursing profession. 1960
64010061 610.73 A
ABELL, AARON IGNATIUS
American Catholicism and social action, 1865-
1950. 1960
64010062 261.8 A
ABELL, ELIZABETH FRANCES
Westward, westward, westward; the long trail
west and the men who followed it. 1958
64010064 978 A
ABFLL, GEORGE OGDEN
Exploration of the universe. 1964
64010065 520 A
ABELL, MARIETTA
Golden banquet book 1962
64010066 642.4 A
School dances and proms; complete practical
suggestions for planning and staging school
dances and proms. 1962
64010067 793.2 A
ABELL, WESTCOTT
Shipwright's trade. 1948
66021006 623.8 A
ABELL, WILLIAM S.
Faithful at Mass. 1958
64010068 264 A
ABELS, JULES
Out of the jaws of victory 1959
64010069 973.918 A
Parnell tragedy. 1966.
66016631 B P
Rockefeller billions. 1965
65017943 B R
Truman scandals. 1956
64010070 973.918 A
ABELS, ROBERT
Early American firearms. 1950
64010071 683 A
ABERCROMBIE, LASCELLES
Art of Wordsworth. 1952
65017944 821 W
Idea of great poetry. 1925.
66017180 109.1 A
Principles of literary critici:
64010072 801 A
Romanticism. 1963
64010073 141 A
Thomas Hardy, a critical study. 1912.

SAMPLE 5

FORM

A

AACHEN--HISTORY
Sullivan, Richard Eugene Aix-la-Chapelle in the age of Charlemagne 1963
64058491 943.423 S
AALTO, HUGO ALVAR HENRIK
Aalto, Hugo Alvar Henrik Alvar Aalto 1963
64010015 720.9471 A
Gutheim, Frederick Albert Alvar Aalto 1960
64032080 720.9471
AARON WARD (DESTROYER, 3RD)
Lott, Arnold S. Brave ship, brave men 1964
65017119 940.545 L
ABACUS
Kojima, Takashi Advanced abacus 1963
64039091 511.2 K
Kojima, Takashi Japanese abacus 1954
65017051 511.2 K
Yoshino, Yozo Japanese abacus explained 1963
64065475 511.2 Y
ABAILARD, PIERRE
Gilson, Etienne Henry Heloise and Abelard 1960
64030281 B H
Meadows, Denis Saint and a half 1963
64044822 920 M
Sikes, Jeffrey Garrett Peter Abailard 1965.
66019233 189.4 S
ABAILARD, PIERRE--POETRY
Whitman, Cedric Hubbell Abelard 1965.
66012102 811 W
ABBEYS--ENGLAND
Cook, Olive English abbeys and priories 1960
64021734 726.7 C
Gasquet, Francis Aidan, cardinal Greater abbeys of England 1908
64029700 726 G
ABBOT, CHARLES GREELEY
Abbot, Charles Greeley Adventures in the world of science 1958
64010031 B A
ABBOTT, EDWIN ABBOTT. FLATLAND
Burger, Dionys Sphereland 1965.
66011458 513.82 B
ABBOTT, GEORGE
Abbott, George Mister Abbott 1963
64010041 B A
ABBOTT LABORATORIES
Kogan, Herman Long white line c1963
65012779 338.4 K
ABBOTT, ROBERT S
Ottley, Roi Lonely warrior: the life and times of R S Abbott 1955
64048739 B A
ABBREVIATIONS
Buttress, Frederick Arthur World list of abbreviations of scientific, technological and commercial organizations 1960
64018494 421 B
DeSola, Ralph Abbreviations dictionary 1958
64024030 Ref 421 D 1958
DeSola, Ralph Abbreviations dictionary 1964
64024029 Ref 421 D 1964
Stephenson, Herbert John Abbrevs. 1943
64057721 Ref 421 S
ABBREVIATIONS--DICTIONARIES
Acronyms and initialisms dictionary 2d ed. 1965.
66011362 Ref. 421.03 A
Acronyms dictionary 1960
64010145 Ref 421.03 A
Goldstein, Milton Dictionary of modern acronyms and abbreviations 1963
64030656 Ref 421.03 G
Schwartz, Robert J. Complete dictionary of abbreviations 1955
64054660 Ref 421.03 S
ABBREVIATIONS FRENCH
Martin, Charles Trice Record interpreter 2d ed. 1910.
66015708 471 M
ABBREVIATIONS, LATIN
Martin, Charles Trice Record interpreter 2d ed. 1910.
66015708 471 M
ABEL, RUDOLF I
Donovan, James Britt Strangers on a bridge 1964
64024669 327.1 D
ABERDOVEY, WALES. OUTWARD BOUND SEA SCHOOL
Villiers, Alan John And not to yield 1953
64061884 387.5 V
ABILITIES, INC.
Viscardi, Henry Give us the tools 1959
64061927 371.9 V
ABILITY
Bingham, Walter Van Dyke Aptitudes and aptitude testing 1937
64015275 371.42 B
ABILITY GROUPING IN EDUCATION
Brown, Bartley Frank Appropriate placement school: a sophisticated nongraded curriculum 1965.
66018492 371.25 B
ABILITY--TESTING
Flanagan, John Clemans Design for a study of American youth 1962
64027891 151.2 F
Goodlad, John I. Nongraded elementary school Rev. ed. 1963
64030742 371.2 G
Goslin, David A. Search for ability 1963
64030892 151.2 G
Super, Donald Edwin Appraising vocational fitness by means of psychological tests Rev. ed. 1962
64058575 371.26 S 1962
Vernon, Philip Ewart Measurement of abilities 1961
64061754 151.2 V
ABOAB, ISAAC DA FONSECA
Hahn, Emily Aboab, first Rabbi of the Americas 1959
64032241 B A
ABOLITIONISTS
Duberman, Martin B. Antislavery vanguard 1965
65018265 326 D
Lader, Lawrence Bold Brahmins 1961
64039523 326 L
McPherson, James M. Struggle for equality c1964
65013073 973.7 M
Ruchames, Louis Abolitionists 1963
64053350 326 R
Wolf, Hazel Catherine On freedom's altar 1952
66023424 326 W
ABORTION
Calderone, Mary Steichen Abortion in the United States 1958
64018673 616.88 C
Lader, Lawrence Abortion 1966.
66015680 364.15 L
Saint John-Stevas, Norman Right to life 1964
64053682 343.5 S
Schur, Edwin M. Crimes without victims 1965
65020544 364.15 S
Williams, Glanville Llewelyn Sanctity of life and the criminal law 1957
64064150 343 W
X, Doctor Abortionist, by Dr. X 1962
64065295 616.88 X
ABORTION--U.S
Bates, Jerome E. Criminal abortion, a study in medical sociology 1964.
66012184 364.15 B
ABRAHAM, THE PATRIARCH
Hill, Dorothy B. Abraham: his heritage and ours 1957
64034329 B A
ABRAHAMS, PETER
Abrahams, Peter Tell freedor [illegible] es of Africa 1954
64010096 B A
ABSENTEEISM (LABOR)
Gaudet, Frederick Joseph So [illegible] problems of employee absence c1963
65012211 Ref 331.81 G
ACADEMY AWARDS (MOVING-PICTURES)

FORM Fig. 4

OREGON STATE LIBRARY: Master book catalog, September, 1967

Sample 6: Author Catalog
Sample 7: Title Catalog*
Sample 8: Subject Catalog

Typography Equipment

Computer-driven phototypesetting

Page Layout

Printed column width: 3 5/8"

Columns per page: 2

Column width and length: 3 5/8" x 86 lines

Entry separation: 1 line

Central margin: line down center with 2/8" margin on either side

Indentations in the entry: author and subject catalogs have the entry heading in bold face type and capital letters and the call number flush left; the first line of the entry is indented 1/2", remaining lines indented an additional 1/8".

Heading suppression: yes

"Head and foot" notes: no

Running heads: no

Paging: bottom left

Size of page: 8 1/2" x 11"

Printed page length in lines: 88

Percent of reduction: indeterminable

Splitting of entries between columns: "

Repeated entry headings on columns: "

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*Note that Title catalog does not have "see under" messages for its abbreviated entries; rather the [by] statement is carried in inverted main entry form, e.g. Coos River echoes, by Mahoffey, Charlotte L.

SAMPLE 6

FORM

BUXTON, CYRIL RAYMOND
491.782 Russian for scientists, a grammar and reader, by C. R. Buxton and H. Sheldon Jackson. Interscience, 1960. 299 p.

BUXTON, ETHEL MARY WILMOT
SEE
Wilmot-Buxton, Ethel Mary.

BUXTON, GEORGE FREDERICK
372.3 Paper and cardboard construction. 4th ed. Manual Arts, c1916. 178 p. Illus.
372.3 Paper and cardboard construction, by George Fred Buxton and Fred L. Curran. 3d ed. Manual Arts, c1915. 191 p. Illus.

BUXTON, JOHN
709.42 Elizabethan taste. Macmillan, c1963. 370 p. Illus.
811 "Such liberty." Macmillan, c1944. 41 p.
SEE
811 Drayton, Michael. Poems.

BUXTON, PATRICK ALFRED
591.916 Animal life in deserts, a study of the fauna in relation to the environment. Arnold, 1923. 176 p. Illus.

BUYERS' GUIDE TO IMPORTED GERMAN PRODUCTS
R670.2 Nordeman. v. Illus

BUYING LIST OF BOOKS FOR SMALL LIBRARIES
028.81 19 -

BUYS, WILLIAM E.
808.5 Speaking by doing: a public speaking worktext. 2d ed. rev. Nat. Textbook Corp., c1963. 231 p. Illus.
808.5 Speaking by doing: a public speaking worktext for high school students. National Textbook Corporation, c1960. 232 p. Illus.

BUYTENDIJK, FREDERIK JACOBUS JOHANNES
636.7 Mind of the dog. Houghton, c1936. 213 p. Illus.
Translated by Lillian A. Clare.
612.884 Pain, its modes and functions. Translated by Eda O'Shiel. University of Chicago Press, c1961. 189 p.
Translation of Over de pijn.

BUZARD, HELEN G.
q372 Some new, some old suggestions for teachers of young children. Columbia Univ., c1947. 24 p. Illus.

BY AN UNKNOWN DISCIPLE
232.9 Doran, c1919. 246 p.

BYAM, EBER COLE
SEE
972.08 Kelley, Francis Clement, Bp. Blood-drenched altars.

BYAM, FRANCIS MARION
SEE
309.795 P829r Portland. Chamber of Commerce. Review of business conditions.
R336.265 Ore. Portland. Chamber of Commerce. Research Dept. Tax limitation amendment.

BYAM, WALLY
796.7 Fifth Avenue on wheels. Traveling around the world in a trailer. Cambridge, c1953. 124 p. Illus.
796.7 Trailer travel here and abroad; the new way to adventurous living. McKay, c1960. 303 p. Illus.

BYARS, WILLIAM VINCENT
921 American commoner. the life and times of Richard Parks Bland: a study of the last quarter of the 19th century; with an introd. by W. J. Pryan and Personal reminiscences by Mrs. R. P. Bland. Stephens, c1900. 404 p. Illus.
q808.5 Handbook of oratory; a cyclopedia of authorities on oratory as an art and of celebrated passages from the best orations from the earliest period to the present time. Kaiser, c1901. 557 p. Illus.

BYAS, HUGH
952.033 Government by assassination. Knopf, c1942. 369 p.
952.033 Japanese enemy, his power and his vulnerability. Knopf, 1942. 107 p.

BYCHOWSKI, GUSTAV
920 B989d Dictators and disciples from Caesar to Stalin; a psychoanalytic interpretation of history. Pref. by Carl Binger. International Universities Press, c1948. 264 p.

BYE, ARTHUR EDWIN
754 Pots and pans; or, Studies in still-life painting. Princeton University Press, c1921. 236 p. Illus.

BYE, EDGAR C.
R016.3753 Bibliography on the teaching of the social studies. Rev. ed. Wilson, 1933. 104 p.

BYE, RAYMOND TAYLOR
330 Applied economics; the application of economic principles to problems of policy. 5th ed. Appleton, c1960. 595 p.
330 Applied economics; the application of economic principles to the problems of economic life, by Raymond T. Bye and William H. Hewett. Knopf, c1928. 655 p. Illus.
330 Applied economics; the application of economic principles to the problems of economic life. 3d rev. ed. Crofts, c1938. 690 p. Illus.
330 Applied economics; the application of economic principles to the problems of economic life. 4th ed., rev. Appleton, c1947. 718 p. Illus.
343.2 Capital punishment in the United States. Committee on Philanthropic Labor of Philadelphia, Yearly Meeting of Friends, c1919. 106 p. Illus.
330 Economic process, its principles and problems, by Raymond T. Bye and William W. Hewett. Appleton, c1952. 1050 p. Illus.
330 Principles of economics. 5th ed. Appleton, c1956. 691 p. Illus.
330 Principles of economics. Knopf, c1924. 508 p. Illus.

BYERLY, KENNETH R.
070.48 Community journalism. Chilton, c1961. 435 p.

BYERLY, WILLIAM ELWOOD
516.56 Elementary treatise on Fourier's series and spherical, cylindrical, and ellipsoidal harmonics, with applications to problems in mathematical physics. Ginn, c1893. 287 p. Illus.

BYERS, A. M. COMPANY
669.1 New story of ancient wrought iron. 1933? 16 p. Illus.
q671 Theory and practice of threading genuine wrought iron pipe. 1932. 23 p. Illus. (its Bulletin no.52)

BYERS, BARBARA
SEE
352.9 Washington State Association of County Commissioners. County government in Washington State.

BYERS, CHESTER
799.262 Roping; trick and fancy rope spinning, by Chester Byers, with contributions by Fred Stone, Will Rogers and Elsie Janis. Putnam, c1928. 105 p. Illus.

BYERS, EDWARD ELMER
SEE
610.69 Root, Kathleen Berger. Medical secretary.

BYERS, HORACE ROBERT
551.5 Synoptic and aeronautical meteorology. McGraw, c1937. 279 p. Illus.

BYERS, JEAN M.
793.2 And the stars heard, a musical play for elementary schools prepared especially for American Education Week. N. E. A., 1942. 15 p.
793.2 Let me come back; a play for American Education Week, 1943. N. E. A., c1943. c1943. 15 p. Illus.
793.2 Time for Elizabeth; a play about peace, for American Education Week, 1943. N. E. A., c1943. 15 p. Illus.
793.1 We hold these truths; a musical play for high schools, based on the Declaration of Independence. Music by Avico Saint N. E. A., c1941. 39 p.
SEE
808.8363 Educational Policies Commission. On our way.

BYERS, JOSEPH PERKINS
365 America's crime cradles, county and city jails; 1945? 7 p.

BYERS, MARGARETTA
646 Designing women; the art, technique, and cost of being beautiful, by Margaretta Byers with Consuelo Kamholz; illustrated by Jane Miller; introduction by Alice Hughes. Simon, c1938. 276 p. Illus.
374.06 Help wanted - female, careers in the field of fashion. Messner, c1941. 386 p. Illus.

BYERS, RALPH EUGENE
736 Wood carving with power tools. Chilton, c1959. [illegible] Arts and crafts series)

BYERS, TRACY
921 B458b Martha Berry, the Sunday Lady of Possum Trot. Putnam, c1932. 268 p. Illus.

SAMPLE 7

FORM

630.7	Cooperative extension work, by Kelsey, Lincoln David.
025.177	Cooperative film services in public libraries, by American Library Association.
630.13	Cooperative group living, by Infield, Henrik F.
333.642 no.4 *Ore.	Cooperative hi-lights, by Malheur Cooperative Electric Association.
331.83	Cooperative housing in Sweden, by Alm, Ulla.
334	Cooperative life and business, by Bunn, Harriet F.
335.9569	Cooperative living in Palestine, by Infield, Henrik F.
378.15	Cooperative long-range planning in liberal arts colleges, by McGrath, Earl James.
630.13	Cooperative marketing, by Cumberland, William Wilson.
*630.183 Ore. au	Cooperative marketing, by Dixon, E. J.
630.13	Cooperative marketing, by Steen, Herman.
630.183	Cooperative marketing associations in business, by Brooker, William C.
630.13	Cooperative marketing of agricultural products, by Comish, Newel Howland.
630.13	Cooperative marketing of farm products, by Jesness, Oscar Bernard.
614.2	Cooperative medicine, by Warbasse, James Peter.
379.11	Cooperative methods in the development of school support in the United States, by Stewart, Roland MacLaren.
309.73 N48p	Cooperative movement, by Lincoln, Murray D.
334	Cooperative movement and some of its problems, by Casselman, Paul Hubert.
R940.318 qC21p no.21	Cooperative movement in Jugoslavia, Rumania and north Italy during and after the world war, by Coffey, Diarmid.
334	Cooperative movement in Latin America, by Fabra Ribas, Antonio.
q334	Cooperative movement in Russia during the war.
q375.3	Cooperative movement in secondary schools, by National Education Association of the United States. Committee on Cooperatives.
361	Cooperative movement in social work, by Norton, William John.
344	Cooperative organization of consumers, by Bowen, Eugene Rider.
334	Cooperative organization of consumers, by Bowen, Eugene Rider.
R332.31	Cooperative people's bank, by Desjardins, Alphonse.
334	Cooperative plenty, by Ross, John Elliot.
371.3	Cooperative procedures in learning, by Miel, Alice.
371.9	Cooperative programs in special education, by Lord, Francis Everette.
	Cooperative programs of curriculum development
	SEE
375	Saylor, John Galen. Factors associated with participation in cooperative programs of curriculum development.
362.2	Cooperative programs of training and research in mental retardation, by Hindman, Darrell A.
658	Cooperative retail buying associations, by White, Willford L.
334	Cooperative road to abundance, by Bowen, Eugene Rider.
334	Cooperative road to abundance, by Bowen, Eugene Rider.
334	Cooperative societies, by Costigan, Mrs. Edward P.
370.73	Cooperative structures in school-college relationships for teacher education, by American Association of Colleges for Teacher Education. Committee on Studies and Standards.
371.11 F9613c	Cooperative study for the better utilization of teacher competencies; report, by Fund for the Advancement of Education, New York.
	Cooperative study of public school expenditures,
	SEE
	American Council on Education. Cooperative Study of Public School Expenditures
373	Cooperative study of secondary school standards, by Cooperative Study of Secondary School Standards.
371.2	Cooperative supervision in the public schools, by Myers, Alonzo Franklin.
378.744	Cooperative venture in higher education, by American Council on Education.
334	Cooperative way, by Warbasse, James Peter.
R375.5	Cooperative work in the organization of local material for general science instruction, by Glenn, Earl R.
334	Cooperatives, by Goslin, Ryllis Clair Alexander.
334	Cooperatives pay their taxes, by Voorhis, Horace Jeremiah.
973.3356	Cooperstown Sullivan-Clinton sesqui-centennial commemoration, August 9 - 10, 1929, by Sullivan-Clinton Sesqui-Centennial Celebration.
385.0973	Coordinated motor-rail-steamship transportation, by Wilson, George Lloyd.
361	Coordinating councils, by Beam, Kenneth S.
R336.294	Coordination and integration of federal, state, and local tax systems, by Hall, James Kendall.
341.1 no.2 C198u	Coordination of economic and social activities, by Carnegie Endowment for International Peace.
q336.257	Coordination of federal and state tobacco taxation, by Interstate Commission on Conflicting Taxation.
R336.294	Coordination of federal, state and local fiscal systems, by Leland, Simeon Elbridge.
336.2	Coordination of federal, state, and local taxation, by Joint Committee of the American Bar Association, the National Tax Association, and the National Association of Tax Administrators.
352.1	Coordination of financial reporting systems of California state and local governments, by Curry, David A.
535.1	Coordination of light and music, by Powell, Alvin Leslie.
R386.9	Coordination of rail & highway transportation, by Scarr, F. J.
371.911	Coordination of the work of the residential school for the blind with that of the public school, by Dry, Walter Rodda.
R380.973	Coordination of transportation is vital economic need, by Dalton, James.
q301.45 C788 *Ore.	Coordinator.
*317.95 ore.	Coos Bay community progress, by Coos Bay Monthly.
*979.5 ore. C76	coos Bay monthly.
R317.95 C77m *Ore.	Coos Bay, Oregon, by Marshfield, Ore. Chamber of Commerce.
917.95 C78p *Ore.	Coos county directory, by Polk, R. L. and Company, Pub.
917.95 C78t *Ore.	Coos county directory, by Tscheu Publishing Company.
352.9	Coos county government, by League of Women Voters of Coos Bay, Oregon.
*317.95 ore.	Coos County, Oregon's happy hunting ground, by Coos County Chamber of Commerce.
979.523	Coos River echoes, by Mahaffy, Charlotte L.
970.65	Coos texts, by Frachtenberg, Leo Joachim.
q506 C21p no.597	Copan ceramics, by Longyear, John Munro.
509.21 C79o	Cope, by Osborn, Henry Fairfield.
810.8	Copeland reader, by Copeland, Charles Townsend.
808.8	Copeland translations, by Copeland, Charles Townsend.
914.89	Copenhagen, by Turistforeningen For Denmark.
523.2	Copernican revolution, by Kuhn, Thomas S.
520.92 C79k	Copernicus and his world, by Kesten, Hermann.
921 C791a	Copey of Harvard, by Adams, James Donald.
q336.73	Copies of letters and resolutions sent to municipalities in the state urging every possible reduction in spending as an urgently needed aid to national defense, by Tennessee Taxpayers Association.
R791.1	Copies of letters concerning Eadweard Muybridge and his photographs of animals in motion, by Leigh, Janet.
*317.95 ore.	Copies of letters to his cousin, Nathaniel H. Fordyce, by Coe, Nathaniel.
R979.5 Ore.	Copies of letters written by Mrs. Norton, by Norton.
375.62	Coping saw work, by Johnson, Benjamin W.
q694	Coping saw work for elementary manual training, by Worst, Edward Francis.
658	Coping with correspondence, by Cox, Homer L.
	Coping with crime
	SEE ITS
365.46	National Probation Association. Annual report and proceedings. 31st. 1937.
R473	Copious and critical English-Latin dictionary, by Smith, Sir William.
780.8	Copland on music, by Copland, Aaron.
929.2 Gen. C793m	Coppage-Coppeige family, 1542-1955, by Manahan, John E.
	Copper:
	IN
538.12 B79m	Julian, Carl Edward. Mineral economics. c1932.
q620.18	Copper and copper base alloys, by Wilkins, Richard Alfred.
669.1	Copper as an alloying element in steel and cast iron, by Lorig, Clarence Herman.
978.6	Copper camp, by Writers' Program. Montana.
739	Copper enameling, by Watts, Harold W.
338.12	Copper in the Americas, by Reid, William Alfred.
612.015	Copper metabolism, by Johns Hopkins University. McCollum-Pratt Institute.
669.3	Copper smelting industries of Canada, by Wilson, Alfred W. G.
811	Copper sun, by Cullen, Countee.
352.001	Copper town: changing Africa, by Powdermaker, Hortense.
q739	Coppercraft and silver made at home, by Kramer, Karl Robert.
971.2	Coppermine journey, by Hearne, Samuel.
	Coptic church and Egyptian monasticism.
	IN
932 G45l	O'Leary, De Lacy Evans. The legacy of Egypt.
070.4	"Copy," by Hoover, Donald D.
971.2 11 H865p	Copy-book of letters outward etc., begins 25th May, 1680 ends 5 July, 1687, by Hudson's Bay Company.
qR385.311	Copy of a letter to Representative Schuyler Merri 'd, Solomon Davies.
336.73	Copy of letter and resolution sent to U. S. gove urging reduction of nondefense expenditures, by Tenn Association.
557.95 *Ore.	Copy of talk given at the annual dinner meeting of t gon section of the American Institute of Mining and Metallurgical engineers, Portland, October 16th, 1939, by Smith, Warren Du Pre.

SAMPLE 8

FORM

BAVARIA - HISTORY - 1777-1918

943.3 **Richter, Werner.** Mad monarch; the life and times of Ludwig II of Bavaria. Translated from the German by William S. Schlamm. Regnery, c1954. 280 p. Illus.

BAVARIA - INDUSTRIES AND RESOURCES - DIRECTORIES

q670.2 B341 Bayerisches Landes-Adressbuch fur Industrie, Handel und Gewerbe; Bayernbach. Adressbuch derim Handelsregister eingetragenen Firmen und der gewerblichen Fernsprechteilnehmer sowie der freien Berufe Bayerns. 32 Ausgabe. 19 - . Adressbuchverlagsgesellschaft Ruf, 19 - v.

BAVARIA - POLITICS AND GOVERNMENT

342.433 **Mattern, Johannes.** Bavaria and the Reich; the conflict over the Law for the protection of the republic. Johns Hopkins Press, 1923. 125 p. (Johns Hopkins University studies in historical and political science. ser.xli, no 3)

BAVARIA, UPPER - DESCRIPTION AND TRAVEL - GUIDE-BOOKS

914.33 **Baedeker, Karl, Firm Publishers, Leipzig.** Southern Bavaria. Macmillan, 1953. 320 p. Illus.

BAWDEN, EDWARD

750.92 B328r **Richards, James Maude.** Edward Bawden. Penguin, 1946. 16 p. 32 plates. (part co.) port. (Penguin modern painters.)

BAX, EMILY

921 B33m **Bax, Emily.** Miss Bax of the embassy. Houghton, c1959. 311 p. Illus.

BAXTER, JAMES HOUSTON

878.9 **Augustinus, Aurelius, Saint, Bp. of Hippo.** Select letters, with an English tr. by James Houston Baxter. Harvard Univ. Pr., 1953. 535 p. (Loeb Classical Library. Latin authors)

BAXTER, RICHARD

261.7 **Loane, Marcus L., Bp.** Makers of religious freedom in the seventeenth century: Henderson, Rutherford, Bunyan, Baxter. Eerdmans, c1961. 240 p. Illus.

BAY ISLANDS, HONDURAS

917.283 **Houlson, Jane Harvey.** Blue blaze; danger and delight in strange islands of Honduras. Bobbs, c1934. 305 p. Illus.

BAY PSALM BOOK

223.5 **Haraszti, Zoltan.** Enigma of the Bay Psalm book. University of Chicago Press, c1956. 143 p. Illus.

BAYARD, PIERRE DU TERRAIL, SEIGNEUR DE

945.06 **Shellabarger, Samuel.** Chevalier Bayard; a study in fading chivalry. Century Co., c1928. 391 p. Plates, ports.

BAYARD, THOMAS FRANCIS

q973.8 **Tansill, Charles Callan.** Congressional career of Thomas Francis Bayard, 1865 - 1885. Georgetown University Press, c1946. 302 p. Port. (georgetown University, D. C. Studies in history no.1)

2293960 327.7 **Tansill, Charles Callan.** Fordham University Press, 19409 800 p. Port., illus., map.

BAYER, HERBERT

q709 **Dorner, Alexander.** Way beyond 'art'; the work of Herbert Bayer. Wittenborn, c1947. 244 p. Illus. (On cover: Problems of contemporary art. No.3)

BAYEUX TAPESTRY

q746 **Stenton, Sir Frank Merry.** Bayeux tapestry: a comprehensive survey, by Frank Stenton, general editor, Simone Bertrand and others. New York, Phaidon Publishers; distributed by Garden City Books, c1957. 182 p. Illus. (part mounted, part col.) map. 31 cm.

746 **Wheeler, Candace Thurber.** Development of embroidery in America. Harper, c1921. 151 p. Pot., Illus.

BAYLIS FAMILY

929.2 Gen. **Blum, Willetta Baylis.** Baylis family of Virginia, compiled by Willetta Baylis Blum and William Blum, Sr. With the assistance of Joseph Franklin Baylis, and others. Supplements on the Chunn, Fawsett, Hawkins, and Turner families, and a Baylis family in England c1958. 669 p. Illus.

BAYNES, ERNEST HAROLD

509.21 **Gorges, Raymond.** Ernest Harold Baynes, naturalist and crusader. Houghton, c1928. 255 p. Illus.

BAYONETS

355.5 **Waldron, William Henry.** Elements of trench warfare, bayonet training. Appleton, 1917. 225 p. Illus

BAZAARS, CHARITABLE

680 **American Home (Periodical.** Make your church bazaar a huge success. 1945. 20 p. Illus.

680 **Hawes, Harriet.** McCall's complete book of bazaars, by Harriet Hawes and Eleanor Edelman. Simon, c1955. 120 p. Illus.

361.73 **Smith, Margaret Ruth.** Church and club woman's companion, by Ann Seranne and Eileen Gaden. Illus with 126 photos. by Eileen Gaden. Dougleday, 1964. 340 p.

BEACHES

627.5 **Carey, Alfred Edward.** Tidal lands: a study of shore problems, by A. W. Carey and F. W. Oliver. Van Nostrand, 1918. 284 p. Illus.

551.36 **King, Cuchlaine A. M.** Beaches and coasts. Arnold, c1959. 403 p. Illus.

581.9 **Olsson-Seffer, Pehr Hjalmar.** Genesis and development of sand formations on marine coasts. The sand strand flora of marine coasts. Augustana, 1910. 183 p. Illus. (Agustana library publication no.7.)

BEACONSFIELD, BENJAMIN DISRAELI, 1ST EARL OF

921 B356 **Beebe, Elswyth Thane Ricker.** Young Mr. Disraeli. Harcourt, 1936. 337 p. Illus.

810.91 B777b no.138 **Bloomfield, Paul.** Disraeli. Longmans, c1961. 37 p. Port. (British Book News. Bibliographical series of supplements on writers and their work. no.138)

921 D35c **Clarke, Sir Edward.** Benjamin Disraeli: the romance of a great career, 1804-1881. Macmillan, 1926. 305 p. Illus.

921 B35f **Froude, James Anthony.** Earl of Beaconsfield. Dutton, n.d. 267 p (Everyman's library)

814 **Garnett, Richard.** Essays of an ex-librarian. Heinemann, 1901. 359 p.

921 B35m3 **Masefield, Muriel Agnes Bussell.** Peacocks and primroses; a survey of Disraeli's novels. Bles, 1953. 319 p. Illus.

921 B35m2 **Maurois, Andre.** Disraeli. Lane, 1932. 343 p. Port.

921 B35m **Monypenny, William Flavelle.** Life of Benjamin Disraeli, earl of Beaconsfield, by W. F. Monypenny and G. E. Buckle. Macmillan, c1910-20. 6 v. Illus., ports.

921 B35m1 **Murray, David Leslie.** Disraeli. Little, 1927. 298 p. Port., plates. (Curiosities of politics)

921 B35p **Pearson, Hesketh.** Dizzy; the life and personality of Benjamin Disraeli, earl of Beaconsfield. Harper, c1951. 310 p. Illus., ports.

921 B35r **Raymond, Edward Thompson, pseud.** Disraeli: alien patriot. Doran, c1925. 346 p. Ports.

921 B35r1 **Roth, Cecil.** Benjamin Disraeli, earl of Beaconsfield. Philosophical Library, c1952. 178 p. Illus.

921 D35s **Somervell, David Churchill.** Disraeli and Gladstone, a duo-biographical sketch. Doran, c1926. 319 p. Front.

813.9 **Speare, Morris Edmund.** Political novel; its development in England and in America. Oxford University Press, c1924. 377 p. Port.

BEADLE AND ADAMS, FIRM

655.4 **Johannsen, Albert.** House of Beadle and Adams and its dime and nickel novels; the story of a vanished literature. With a foreword by John T. McIntyre. University of Oklahoma Press, c1950. 2v. Illus., ports.

BEADWORK

q746 **Hunt, Walter Bernard.** American Indian beadwork, by W. Ben Hunt and J. F. "Buck" Burshears. Bruce, c1951. 63 p. Illus.

746 **Littlejohns, Idalia Blanche Hewett.** Beadcraft. Pitman, 1900. 101 p. Illus. (Pitman's craft for all series)

746 **Wissler, Clark.** Indian beadwork; a help for studentis of design. American Museum of Natural history. Guide leaflet no.50)

BEAGLE EXPEDITION, 1831-1836

508.3 **Darwin, Charles Robert.** Charles Darwin and the voyage of the Beagle, edited, with an introduction, by Nora Barlow. Philosophical Library, c1946. 279 p. Illus.

508.3 **Darwin, Charles Robert.** Journal of researches into the geology and natural history of the various countries visited during the voyage of H. M. S. Beagle round the world. Dutton, c1906. 496 p. Illus. (Everyman's library; ed. by Ernest Rhys: Science)

508.3 **Williams-Ellis, Amabel.** Voyage of the Beagle; adapted from the narratives and letters of Charles Darwin and Capt.. Fitz Roy by Amabel Williams-Ellis, and others; illustrated by Kaj Kiltgaard. Lippincott, c1931. 277 p. Illus.

BEAGLES (DOGS)

636.7 **Black, Glenn G.** American beagling, by "Old Kickapoo"(Glenn G. Black) Putnam's, c1949. 292 p. Illus.

636.7 **Denlinger, William Watson.** Complete beagle. Denlinger, c1956. 143 p. Illus.

636.7 **Gray, Thelma.** Popular beagle. Arco, c1963. 220 pp [illegible] dog books)

636.7 **Holcombe, Alfred D.** Pet beagle. The health of yo[illegible] by Judd T. Gilmour. All-Pets Books, c1954. 64 p. Il[illegible]

636.7 **Whitney, George D.** This is the beagle. Illustrated by [illegible]art. Practical Science Pub. Co. c1955. 252 p. Illus.. (The Practical Science breed series)

The sample page from Harvard's Widener Shelf List presents, in one column, brief information about each entry: call number, the number of parts or volumes to the work is more than one, author (no dates), title, place of publication, and date. The entries displayed on the sample shelf list page from Stanford are in two columns and contain fairly full data: call number, author (not dates), full title, publisher and date, pagination and illustration statements, tracings, holdings, and location information. This shelf list was formatted with a 98 character line and a page of 40 lines and was printed on 4 ply paper. A key at the top of each page indicates the first call number on that page.[1]

Note that conventional LC call numbers used by Stanford need a special routine to get them into proper sequence; the sort is not a straight alphabetic sort.

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[1] Johnson, Richard. p. "A Book Catalog at Stanford" in Journal of Library Automation, March, 1968. Pp. 13-50.

FORM Fig.5: SHELF LIST SAMPLE PAGE - WIDENER LIBRARY, HARVARD

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CRUS   238  EXPECITICN UNDER WILLIAM OF AQUITAINE AND OTHERS, 1100-1102
    CRUS 238.1                RIANT, PAUL.  UN CERNIER TRIOMPHE C URBAIN.  PARIS, 1883.
    CRUS 238.2                RIANT, PAUL.  LE MARTYRE DE THIEMON DE SALZBOURG.  PARIS, 1886.
CRUS   240  KINGCOM CF JERUSALEM, 1099-1187 - LAWS AND ORGANIZATICN - FOLIOS
    CRUS 24C.1          2V    ACADEMIE DES INSCRIPTIONS ET BELLES-LETTRES.  RECUEIL DES HISTORIENS DES CROISADES. LOIS.
                                 ASSISES DE JERUSALEM...PUBLIEES PAR...A.A. BEUGNOT.  PARIS, 1841-43.
    CRUS 24C.2F         2P    JERUSALEM, KINGDOM OF.  ASSISES ET BONS USAGES CU ROYAUME DE JERUSALEM. 2 IN 1.  PARIS, 1690.
    CRUS 24C.3          2V    FOUCHER, VICTOR.  ASSISES DU RCYAUME DE JERUSALEM. PT. 1-2.  RENNES, 1839-41.
    CRUS 24C.4                ASSISES C ANTICCHE.  VENICE, 1876.
CRUS   242  KINGCOM CF JERUSALEM, 1099-1187 - LAWS AND ORGANIZATICN - OTHER WORKS
    CRUS 242.1                CROICTS, AUTORITEZ ET PRERCGATIVES.  PARIS, 1586.
    CRUS 242.3                JERUSALEM (LATIN KINGOCM).  LES LIVRES CES ASSISES ET DES USAGES...JERUSALEM.  STUTTGARD.,
                                 1839.
    CRUS 242.5                THOMAS, G.M.  EINE ENCYCLICA AUS DEM 9. JAHRHUNCERT.  MUENCHEN, 1865.
    CRUS 242.6                MONNIER, FRANCIS.  GODEFROI DE BOUILLON ET LES ASSISES DE JERUSALEM.  PARIS, 1874.
    CRUS 242.7                GRANDCLAUCE, M.  ETUDE CRITIQUE SUR LES LIVRES CES ASSISES DE JERUSALEM.  PARIS, 1923.
    CRUS 242.9                REY, E.  LES CCLONIES FRANQUES CE SYRIE AU XII ET XIII SIECLES.  PARIS, 1883.
    CRUS 242.11               PARDESSUS.  MEMOIRE SUR UN MCNUMENT DE L ANCIEN DROIT.  PARIS, 1829.
    CRUS 242.12               DODU, G.  HISTOIRE DES INSTITUTIONS MONARCHIQUES.  PARIS, 1894.
    CRUS 242.13               LAMCNTE, J.L.  FEUDAL MONARCHY IN THE LATIN KINGDOM OF JERUSALEM 1100 TO 1291.  CAMBRIDGE,
                                 1932.
    CRUS 242.15               MAS LATRIE, L. CE.  LE FIEF DE LA CHAMBERLAINE ET LES CHAMBELLANS DE JERUSALEM.   1882.
    CRUS 242.17               MUNRC, C.C.  THE KINGDCM OF THE CRUSADERS.  STUDENTS ED.  NY, 1935.
CRUS   245  KINGCOM CF JERUSALEM, 1099-1187 - TRACT VOLUMES
    CRUS 245.                 PAMPHLET BOX. KINGDOM CF JERUSALEM.
CRUS   250  KINGCOM CF JERUSALEM, 1099-1187 - HISTORY - GENERAL
HOUGHTCN  CRUS 25C.1.1CP*     CHRCNIK CES KREUZFAHRER-KOENIGREICHES JERUSALEM...FACS. DER BURG.-FLAEMISCHEN MINIATUR
                                 HANCSCHR.  MUENCHEN, 1924.
HOUGHTCN  CRUS 25C.1.12F*     CHRCNIK CES KREUZFAHRER-KOENIGREICHES JERUSALEM. GELEITWORT.  MUENCHEN, 1924.
    CRUS 25C.3                RESCLD, CHRISTOPH.  HISTORIAE URBIS ET REGNI HIEROSOLYMITANI...  ARGENTORATI, 1636.
    CRUS 25C.4                HAGENMEYER, H.  FULCHERI CARNOTENSIS HIST. HIEROSOLYMITANA, 1095-1127.  HEIDELBERG, 1913.
    CRUS 25C.4.5              FULCHERIUS CARNCTENSIS.  FULCHER OF CHARTRES, CHRONICLE OF THE FIRST CRUSADE.  PHILADELPHIA,
                                 1941.
    CRUS 25C.5                CLEWBERG, CHRIS.  DE REGNO HIERCSOLYMITANO SUB FRANCIS...  UPSALIAE, 1726.
    CRUS 25C.7                CRONCLCGIA DE RE LATINI DI GERUSALEMME.   LIVORNO, 1784.
    CRUS 25C.10               SYBEL, HEINRICH VON.  UEBER DAS KOENIGREICH JERUSALEM, 1100-1131.  N.P., 18--.
    CRUS 25C.12               HODY, LE BARON DE.  DESCRIPTICN DES TOMBEAUX DE GODEFROID DE BOUILLON...  BRUXELLES, 1855.
    CRUS 25C.12.2             HODY, LE BARON CE.  GODEFROID DE BCUILLCN ET LES ROIS LATINS DE JERUSALEM.  PARIS, 1859.
    CRUS 25C.14               REY, E.G.  ESSAI SUR LA DOMINATICN FRANCAISE EN SYRIE... PARIS, 1866.
    CRUS 25C.15               REY, E.G.  RECHERCHES GEOG. ET HIST. SUR LA DOMINATION DES LATINS...  2 ED. BD. IN 1 V.
                                 PARIS, 1877.
    CRUS 25C.15.2             REY, E.G.  RECHERCHES GEOG. ET HIST. SUR LA DOMINATION DES LATINS.  1 ED. PARIS, 1877.
    CRUS 25C.17.2             BESANT, WALTER.  JERUSLAEM, THE CITY OF HEROD AND SALADIN. NEW ED.  LONDON, 1888.
    CRUS 25C.18A              CCNDER, C.R.  THE LATIN KINGDOM OF JERUSALEM.  PALESTINE EXPLORATION FUND.  LONDON, 1897.
    CRUS 25C.18B              CCNDER, C.R.  THE LATIN KINGDOM OF JERUSALEM.  PALESTINE EXPLORATION FUND.  LONDON, 1897.
    CRUS 25C.19         2V    ROEHRICHT, REINHOLD.  GESCHICHTE DES KOENIGREICHS JERUSALEM, 1100-1291.  INNSBRUCK, 1898.
    CRUS 25C.19.B             BERCHEM, M. VAN.  NOTES SUR LES CRCISADES I...LE LIVRE DE M. ROEHRICHT.  PARIS, 1902.
    CRUS 25C.20               ROEHRICHT, REINHOLD.  REGESTA REGNI HIEROSOLYMITANI, 1097-1291.  OENIFRONTI, 1893.
    CRUS 25C.21               PRESTON, H.G.  RURAL CONDITIONS IN JERUSALEM DURING THE 12TH CENTURY.  PHILADELPHIA, 1903.
    CRUS 25C.22               TUDEBODUS, PETRUS.  MEMOIRES...SUR SON PELERINAGE.  QUIMPER.   1878.
    CRUS 25C.23               DODU, GASTON.  ROYAUME LATIN DE JERUSALEM.  CONFERENCES, ETC.  PARIS, 1914.
    CRUS 25C.25               MILLER, WILLIAM.  THE LATIN KINGDOM OF JERUSALEM, 1099-1291.  LONDON, 1918.
    CRUS 25C.27               RICHARC, JEAN.  LE RCYAUME LATIN DE JERUSALEM.  PARIS, 1953.
CRUS   253  KINGDOM CF JERUSALEM, 1099-1187 - HISTORY - GENERAL SPECIAL
    CRUS 253.5                ROEHRICHT, REINHOLD.  SYRIA SACRA.  LEIPZIG, 1887.
    CRUS 253.8                RUNCIMAN, STEVEN.  THE FAMILIES CF OUTREMER.  LONDON, 1960.
    CRUS 253.1C               TER-GRIGCRIAN ISKENCERIAN, G.  CIE KREUZFAHRER UND IHRE BEZIEHUNGEN.  INAUG.-DISS.  WEIDA,
                                 1915.
    CRUS 253.15               NICHOLSCN, ROBERT LAWRENCE.  JOSCELYN.  URBANA, 1954.
CRUS   255  KINGCOM CF JERUSALEM, 1099-1187 - HISTORY - GODFREY, 1099-1100
    CRUS 255.1          16P   BARBE, EUSTACHE, ABBE.  DU LIEU DE NAISSANCE DE GODEFROI DE BOUILLON.  16 IN 1.
    CRUS 255.2                HAIGNERE, C. L ABBE.  LA QUESTICN DU LIEU DE NAISSANCE DE GODEFROI DE BOUILLON.  3 IN 1.
                                 BOULOGNE, 1862-68.
    CRUS 255.3                LANNEL, JEAN DE.  LA VIE DE GODEFROY DE BOUILLON, DUC DE LORRAINE.  PARIS, 1625.
    CRUS 255.4                PICO, RANUCCIO.  IL GOFFREDO.  VENETIA, 1627.
    CRUS 255.5                WAHA, GUILIEL DE.  LABORES HERCULIS CHRISTIANI GODEFREDI BULLIONII.           AND., 1674.
    CRUS 255.5.3              WAHA, GUILIEL DE.  LABORES HERCULIS CHRISTIANI GODEFREDI BULLIONII.             88.
    CRUS 255.5.25             WAGNER, JOHANN.  DISSERTATION ACADEMICA DE GODEFRIDO BULLIONIO.  AR           '17.
    CRUS 255.6                FROBOESE, J.  GOTTFRIED VON BOUILLON.  BERLIN, 1879.
HOUGHTCN  CRUS 255.7.5*       GUILELMUS, ABP. OF TYRE.  THE HISTCRY OF GODEFREY OF BOLOYNE AND OF TH      EST OF IHERUSALEM
                                 HAMMERSMITH, 1893.
    CRUS 255.8                SCHRANT, J.M.  LOFREDE OP GODFRIED VAN BOUILLON.  GEND, 1826.
    CRUS 255.9                PREVAULT, H.  GESCHIEDENIS VAN GODEFRIDUS VAN BOUILLON.  ROUSSELAERE, 1835.
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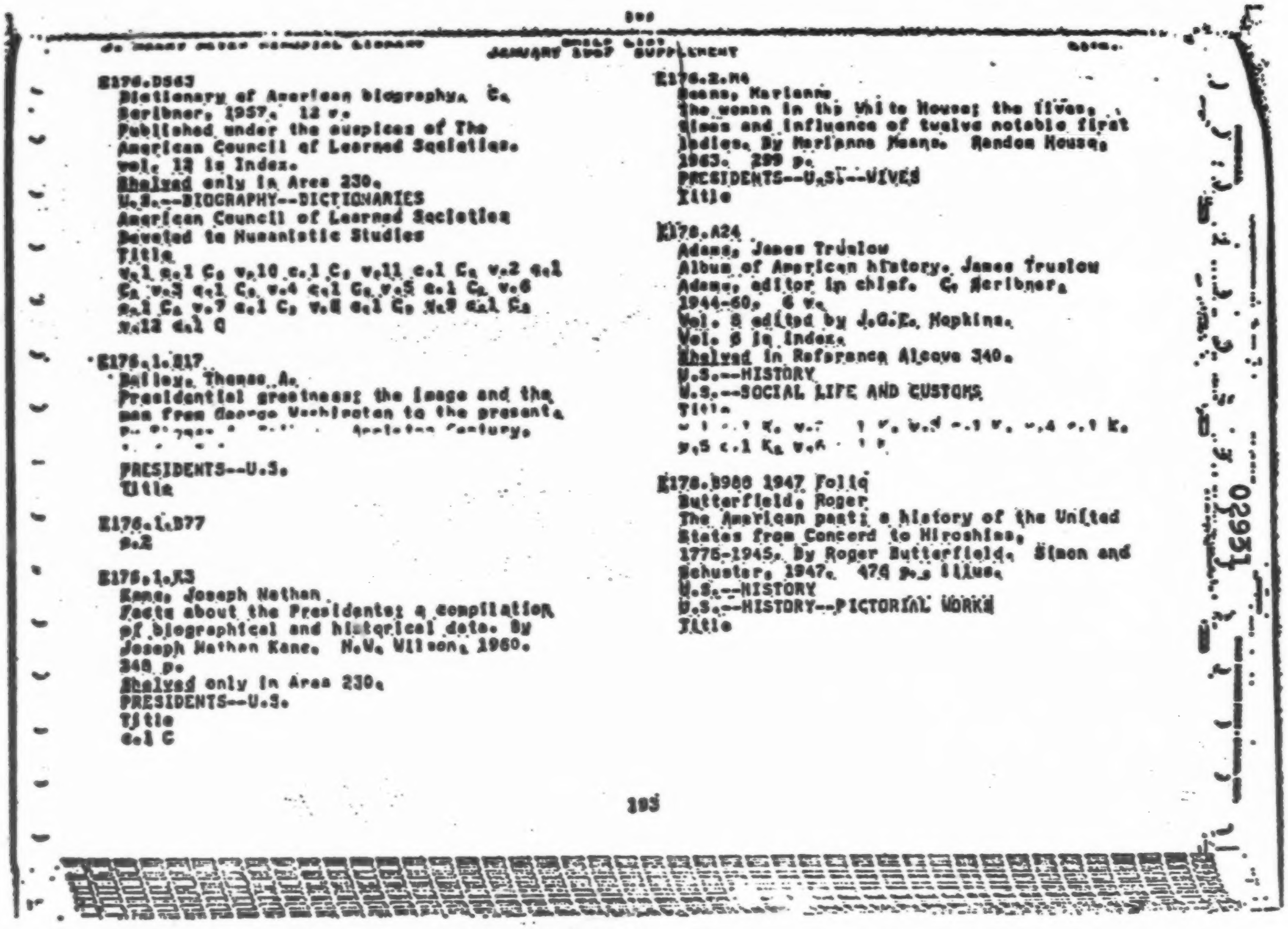
FORM Fig. 6

SHELF LIST SAMPLE PAGE - MEYER LIBRARY, STANFORD



E176.D563
Dictionary of American biography. C. Scribner, 1957. 12 v.
Published under the auspices of The American Council of Learned Societies.
vol. 12 is Index.
Shelved only in Area 230.
U.S.--BIOGRAPHY--DICTIONARIES
American Council of Learned Societies Devoted to Humanistic Studies
Title
v.1 c.1 C. v.10 c.1 C. v.11 c.1 C. v.2 c.1 C. v.3 c.1 C. v.4 c.1 C. v.5 c.1 C. v.6 c.1 C. v.7 c.1 C. v.8 c.1 C. v.9 c.1 C. v.12 c.1 C

E176.1.B17
Bailey, Thomas A.
Presidential greatness; the image and the man from George Washington to the present. [illegible] Appleton-Century.
PRESIDENTS--U.S.
Title

E176.1.B77
c.2

E176.1.K3
Kane, Joseph Nathan
Facts about the Presidents; a compilation of biographical and historical data. By Joseph Nathan Kane. H.W. Wilson, 1960. 348 p.
Shelved only in Area 230.
PRESIDENTS--U.S.
Title
c.1 C

E176.2.M4
Means, Marianne
The woman in the White House; the lives, times and influence of twelve notable first ladies. By Marianne Means. Random House, 1963. 299 p.
PRESIDENTS--U.S.--WIVES
Title

E178.A24
Adams, James Truslow
Album of American history. James Truslow Adams, editor in chief. C. Scribner, 1944-60. 6 v.
Vol. 5 edited by J.G.E. Hopkins.
Vol. 6 is Index.
Shelved in Reference Alcove 340.
U.S.--HISTORY
U.S.--SOCIAL LIFE AND CUSTOMS
Title
[illegible] v.5 c.1 K. v.6 [illegible]

E178.B988 1947 Folio
Butterfield, Roger
The American past; a history of the United States from Concord to Hiroshima, 1775-1945. By Roger Butterfield. Simon and Schuster, 1947. 476 p. illus.
U.S.--HISTORY
U.S.--HISTORY--PICTORIAL WORKS
Title

193

A Page from the January 1967 Shelf List.

II. THE CATALOG ENTRY

Having presented in Section I a set of sample pages, we will now address the major topic of the FORM chapter - the development of a formal method for describing and specifying the wide range of layout, content and format variations possible in the construction of a book catalog from a MARC II data base. Syndetic references are also briefly discussed.

Layout is discussed in terms of grouping entries with similar bibliographic functions (e.g., series added entries, subject added entries) in separate sequences or alphabets. As outlined in chapter FILE, we distinguish five basic alphabets or bibliographic function groups. A definition of the groups, in terms of MARC tags, is given in FORM Fig. 7. Following the method of Section I, we also present a complete set of examples of the entries to be included in each alphabet. These examples are given in FORM Fig. 8.

Content. The major elements found on a catalog card (plus their average size) are listed in FORM Fig. 9. The table can be used to compute the cost in characters for including or excluding a given element of catalog information. The figure presents the elements with their MARC tags, the mean number of characters in each element (as determined from a random sample taken from the California State Library catalogs[1]), and the frequency with which each element was found in the sample.

Format. In FORM Fig. 10, sample entries have been included from various book catalogs to show the variations in main entry style, e.g., capitalization, length of entry, elements included, and arrangement of components. A table describing the parameters of variations accompanies each variation sample. The source of the sample entries is indicated in the figure.[2]

Syndetic References. Given full design implementation, author and subject 'see' and 'see also' references would be created. These latter could be in a form similar to author connecting added entries, i.e., with the note 'See also the following:'

---

[1] Cartwright, K.L. Catalogs in Book Form, 1967, p. 1-3.

[2] See David C. Weber's "Book Catalog Trends in 1966" in Library Trends, July, 1967 (p. 149-163).

For example:

Abbeys

See also the following:
Cathedrals
Convents and nunneries
Monasteries

'See' references could be in a form similar to alternate author added entries, e.g., 'See under' or 'See'.

For example:

Arabic songs. See (under) Songs, Arabic

Arabic architecture. See (under) Architecture, Mohammedan.

Alpha of the plough. See (under) Gardiner, Alfred George.

This topic is also discussed in chapter Authority Verification (VER).

FORM Fig. 7: DEFINITION OF BIBLIOGRAPHIC GROUPS

The table below presents the entries suggested for inclusion in the book-form catalog plus MARC tags, and the estimated number of each type of entry. Different formatting will be required for many of these entries and this formatting will be outlined in detail on the following pages.

ENTRY	MARC TAG	IND 2	NUMBER OF ENTRIES*
A. ENTRIES			
AUTHOR MAIN ENTRY			441,750
Personal, corporate, conference names	100, 110 111		
AUTHOR ALTERNATE ADDED ENTRY ("see under")			111,600
Personal, corporate, and conference names including political jurisdictions with subheadings for organized bodies or officials	700, 710 711	0	
AUTHOR CONNECTING ADDED ENTRY ("see also")			13,950
Personal, corporate, and conference names	700, 710 711	1	
ANALYTIC AUTHOR-TITLE ADDED ENTRY			13,950
Personal, corporate, and conference names	700, 710 711	2	
AUTHOR-TITLE SERIES ADDED ENTRY			13,811
Personal, corporate, or conference name plus title traced same	400, 410 411		
Personal, corporate, or conference name plus title traced differently	800, 810 811		
ADDED ENTRY FOR PROPER NAMES NOT CAPABLE OF AUTHORSHIP	750		**
ADDED ENTRY FOR NAME AS SUBJECT ("SUBJECT")		delim. $t	152,055
Author main entry as subject, and subject added entry for names and for works about other works	600, 610 611		

*Based on estimates from samples of the general and government publications catalogs. Cartwright, K. Catalogs in Book Form. p. 1-36.

**No estimate available

FORM Fig. 7 (cont.)

ENTRY	MARC TAG	IND 2	NUMBER OF ENTRIES*
A. ENTRIES (cont'd)			
TITLE MAIN ENTRY	245 with no 1xx		23,250
UNIFORM TITLE MAIN ENTRY Including entries for a serial as author of a monograph and for anonymous classic titles as main entry	130		**
TITLE ADDED ENTRIES			190,650
Uniform titles that are "alternative", "connecting", or "analytic" in function.	730	0,1,2	
Added entries for titles traced differently and for "connenting" and "analytic" added entries.	740	0,1,2	
TITLE SERIES ADDED ENTRIES	440		28,039
Series title traced differently	840		
UNIFORM TITLE AS SUBJECT ADDED ENTRY	630		23,342
SUBJECT ADDED ENTRIES			329,453
Topical subject headings, including names of real people or peoples, alone or with subject subdivision and not authorized as non-subject headings	650		
Geographic names as subject headings except those authorized as a corporate name or political jurisdiction with subheading	651		
Political jurisdictions alone or with subject subdivisions	652		
B. REFERENCES AND EXPLANATORY NOTES FOR THE CATALOG			**

*Based on estimates from samples of the general and government publications catalogs. Cartwright, K. Catalogs in Book Form. p. 1-36

**No estimates available

SAMPLE ALPHABET GROUPS

The basic structure of the catalog involves dividing the headings by form and then grouping these entries by bibliographic function. The following tables present examples of each of the entry types to be included in our catalog in a style that displays them in their "alphabets" or bibliographic function. This conforms to the tables in Chapter FILE, Sections II.C. and III. D.

FORM Fig. 8: ALPHABET GROUP SAMPLES

Alphabet/Group: 1.0

1. AUTHOR MAIN ENTRY:

Gann, Lewis, 1924-
Huggins of Rhodesia; the man and his country, by L.H.
Gann and M. Gelfand. London, Allen & Unwin [1964]
285 p. illus., ports. 23cm. "Publications by Huggins,
G.M.": p. [273]-274. Bibliography: p. 274-278.
DT960.M3G3

2. AUTHOR ALTERNATE ADDED ENTRY:

Gelfand, Michael.
Huggins of Rhodesia. See under Gann, Lewis H., 1924-
DT960.M3G3

3. AUTHOR ANALYTIC ADDED ENTRY:

Garnier, Robert, 1544?-1590.
Bradamante. (In Garnier, Robert, 1544?-1590. Les
Juifves.) PQ1625.G2A6 1949

4. AUTHOR-TITLE SERIES ADDED ENTRY:

A. UNNUMBERED

Falk Foundation Program of Political Training and Research.
Seminar series.
The Library has the following titles in this series:
Gallagher, John Frederick, 1936- School board politics
in Los Angeles County. Ref.: LB2831.G135s

Gaskell, Elizabeth Cleghorn (Stevenson), 1810-1865. Novels
and tales.
The Library has the following titles in this series:
Gaskell, Elizabeth Cleghorn (Stevenson), 1810-1865.
Ruth. PR4710.R8

B. NUMBERED

Leeds, Eng. University. Institute of Education. Paper.
The Library has the following titles in this series:
No. 1. Leeds, Eng. University. Institute of
Education. Yorkshire field studies (series 1).
DA670.Y6L4 1967

FORM Fig. 8 (cont.)

Missouri. University. Education series.
The Library has the following titles in this series:
No. 80. Garrett, Pauline Bertie Gillette, 1917- The identification of certain competencies in teaching vocational home economics. LB5.M69b no.80

Alphabet/Group: 1.1

AUTHOR CONNECTING ADDED ENTRY

Example:

Silvers, Robert.
See also the following:
The Gangrene; translated from the French by Robert Silvers. New York, L. Stuart [1960] 96 p. 22cm. By 7 Algerians living in France at the time of their arrest. HV6295.F8G35

Truscott, Samuel John.
See also the following:
Beyschlag, Franz Heinrich August, 1856- The deposits of the useful minerals & rocks; their origin, form, and content, by Prof. Dr. F. Beyschlag... tr. by S.J. Truscott... London, Macmillan and co., limited, 1914 2 v. illus. (incl. maps) diagrs. 22cm. 553.1 B57

FORM Fig. 8 (cont.)

Alphabet/Group: $\boxed{2.0}$

1. TITLE MAIN ENTRY

My secret life. Introd. by G. Legman. New York, Grove Press, 1966. 11v.(lxiii, 2359 p.) in 2. 24cm. Issued in a case. Originally published anonymously in an ed. of 6 copies in Amsterdam about 1890. HQ471.M313

2. UNIFORM TITLE MAIN ENTRY

Orfeo (Middle English poem)
Sir Orfeo; edited by A.J. Bliss. [London] Oxford University Press, 1954. li, 70 p. 23cm. (Oxford English monographs) Contains the text of the poem in three versions: the Auchinleck ms., Ms. Harley 3810, and Ms. Ashmole 61. PR2065.06 1954

3. TITLE ADDED ENTRY TRACED SAME

John Woolman, child of light. See under Peare, Catherine Owens. B W543

4. TITLE ADDED ENTRY TRACED DIFFERENTLY

Retirement in Mexico. See under Garrett, M. Truett. A guide to retirement in Mexico. F1216.G36 1965

5. TITLE CONNECTING ADDED ENTRY

Arthur, King (Romances, etc.)
See also the following:
Gawain and the Grene Knight. Sir Gawayne and the Green Knight, an alliterative romance-poem (ab. 1360 A.D.) Re-edited from Cotton m.s. Nero, A.X., in the British Museum, by Richard Morris. 2d ed., rev., 1869. London, Published for the Early English Text Society by N. Trubner, 1864 [i.e. 1869] 124 p. (Early English Text Society. [Publications] Original series, 4) PR1119.E4 no.4

Bulletin of the Atomic Scientists.
See also the following:
The Challenges of space. Hugh Odishaw, editor. Contributors: Ralph S. Cooper [and others] Foreword by Eugene Rabinowitch. [Chicago] University of Chicago Press [1962] 379 p. illus. 22cm. First published as a special issue of the Bulletin of the Atomic Scientists, May-June, 1961; here expanded and brought up to date. TL794.5.C43 1962

FORM Fig. 8 (cont.)

6. TITLE ANALYTIC ADDED ENTRY

Gawain and the Grene Knight. (In Gardner, John Champlin,
1933- The complete works of the Gawain-poet.)
PR1203.G36

Alphabet/Group: 2.1

1. TITLE SERIES ADDED ENTRY (NUMBERED AND UNNUMBERED)

A. UNNUMBERED

The Faber monographs on pottery and porcelain.
The Library has the following titles in this series:
Garner, Harry Mason, Sir, 1891- Oriental blue and
white. NK4565.G33 1964

B. NUMBERED

The Civilization of the American Indian series.
The Library has the following titles in this series:
81. Kilpatrick, Jack Frederick, The shadow of
Sequoyah. PC2121.K5

FORM Fig. 8 (cont.)

Alphabet/Group: 3.0

SUBJECT ADDED ENTRY

(All types: personal, corporate, conference name; uniform title heading; topical; geographic; political jurisdiction.)

A. PERSONAL NAME

DONNE, JOHN, 1573-1631--CONCORDANCES
Combs, Homer Carroll. A concordance to the English
poems of John Donne, by Homer Carroll Combs and Zay
Rusk Sullens. Chicago, Packard [c1940] ix, 418 p.
27cm. PR2248.A3

ELIOT, THOMAS STEARNS, 1888-1965. FOUR QUARTETS.
Preston, Raymond. Four quartets rehearsed; a
commentary on T.S. Eliot's cycle of poems. London,
Sheed & Ward, 1946. viii, 64 p. 21cm.
PS635.Z9M134

FREUD, SIGMUND, 1856-1939
Doolittle, Hilda. Tribute to Freud, by H.D. With
unpublished letters by Freud to the author. [New
York] Pantheon [1956] 180 p. 21cm.
PS3507.0726T68

B. CORPORATE NAME

FRIENDS, SOCIETY OF
Peare, Catherine Owens. John Woolman, child of light;
the story of John Woolman and the Friends. By
Catherine Owens Peare. New York, Vanguard Press,
1954. 254 p. illus. 23cm. Includes bibliography.
B W543

C. UNIFORM TITLE HEADING

LORD'S PRAYER
Garofalo, Salvatore. Il "Pater noster." [Torino]
Edizioni Radio italiana [1955] 86 p. facsim.
(Quaderni della radio, 41) PN1991.15.Q3 v.41

FORM Fig. 8 (cont.)

D. TOPICAL

PELL'S POINT, BATTLE OF, 1776
Abbatt, William, 1857- The battle of Pell's point (or Pelham) October 18, 1776. Being the story of a stubborn fight. With a map, and illustrations from original photographs and family portraits. By William Abbatt. New York, 1901. 2 p. l., 26 numb. l. front., pl., port., map. 27cm. Bibliography: l. 24-26. Edition of 20 copies on large paper. Leaves 10-13 and inclusive plates duplicated. Leaves printed on one side only. 973.3 A12

E. POLITICAL JURISDICTION

MEXICO--DESCRIPTION AND TRAVEL--1951-
Garrett, M. Truett. A guide to retirement in Mexico; double your income, double your fun [by] M. Truett Garrett, Sr. Rev., greatly enl. Brownsville, Tex., Gary Press [1965] 208 p. 23cm. Bibliography: p. 204-205. F1216.G36 1965

FORM Fig. 9: MAJOR ELEMENTS IN A CATALOG ENTRY

ELEMENT (Field)	MARC Field Tag	Mean No. of Characters in Element	% of Cases Present
1. Main entry heading	1xx	32.9	95.4
2. Filing title	240	37.0	0.3
3. Short title	245 $ a	45.0	99.2
4. Remainder of title	$ b	81.3	66.4
5. Remainder of title page transcription	$ c		
6. Edition statement	250		
Imprint:	260		
7. Place of publication	$ a	11.0	73.7
8. Publisher	$ b	24.4	61.2
9. Date	$ c	6.4	91.1
Collation:	300		
10. Pagination	$ a	8.8	84.0
11. Illustration	$ b	16.5	38.5
12. Size	$ c	5.7	68.8
13. Bibliographic price	350		
14. Series notes	4xx	51.6	26.7
15. Bibliography note	504	31.8	15.3
16. Contents note	505	414.1	6.4
17. Other notes:			
General notes	500		
"Bound With" note	501		
Dissertation note	502		
Bibliographic History note	503		
"Limited Use" note	506		
Abstract or annotation	520		
18. Subject added entries	6xx	43.8	59.3
19. Author added entries	700, 710, 711, 753	54.5	19.4
20. Title added entries	730, 740	51.4	8.2
21. Series added entries	8xx	72.4	2.4
22. LC card number	010	7.9	42.0
23. Dewey number	082	6.4	17.3
24. LC call number	050	10.8	33.7
25. Local call number	090	10.3	79.0

FORM Fig. 10: SAMPLES OF MAIN ENTRY FORMATS

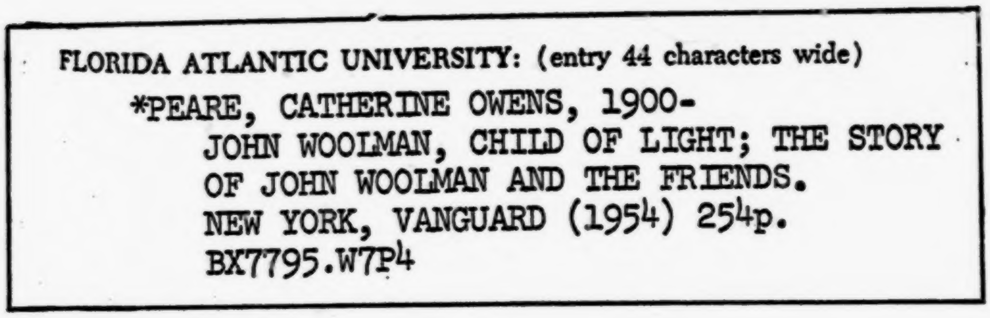
UNIVERSITY OF CALIFORNIA, SANTA CRUZ: (entry 42 characters wide)

```
PEARE, Catherine Owens
   John Woolman: child of light; the story
of John Woolman and the Friends. **
   New York, Vanguard Press
   illus
   Includes bibliography
BX7795.W7P4                             1954
```

No. of Columns per Page: 3

Elements In Catalog Entry	Include/ Not Include	New Line or Continuous?	Capitalization	Line Justification	Indentations
Main Entry	dates not included	new line	last name in capital letters	left column justified	–
Title	full title	new line	upper- and lower-case	–	3 spaces
Imprint	full except date is printed in lower right corner	new line	"	–	3 spaces
Collation	illustration statement only	new line	"	–	3 spaces
Series Notes	(insufficient data)				
Other Notes	Bibliography	new line	"	–	3 spaces
Subject Added Entries	not included				
Author and Title Added Entries	not included				
Local Call Number	lower left corner with publication date in lower right corner	new line	–	call no. is left justified; publication date-right	–
Other	**-meaning unknown				

FORM Fig. 10: SAMPLE MAIN ENTRIES (Cont.)



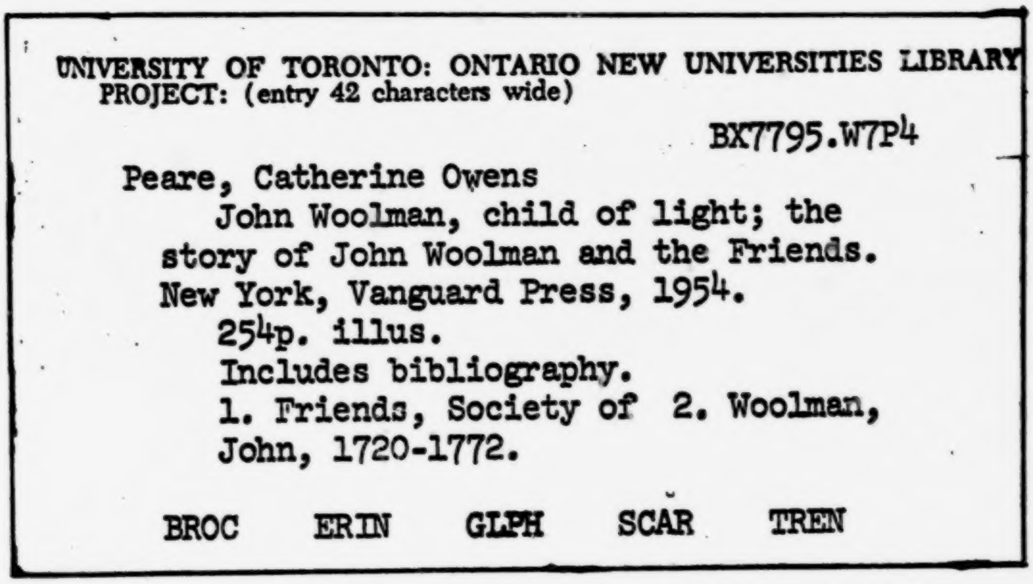
FLORIDA ATLANTIC UNIVERSITY: (entry 44 characters wide)

*PEARE, CATHERINE OWENS, 1900-
JOHN WOOLMAN, CHILD OF LIGHT; THE STORY
OF JOHN WOOLMAN AND THE FRIENDS.
NEW YORK, VANGUARD (1954) 254p.
BX7795.W7P4

No. of Columns per Page: 3

Elements In Catalog Entry	Include/ Not Include	New Line or Continuous?	Capitalization	Line Justification	Indentations
Main Entry	full	new line	all capital letters	left column justified	–
Title	full	new line	"	–	3 spaces
Imprint	full	new line	"	–	3 spaces
Collation	pagination only	continuous	lower case	–	–
Series Notes	(insufficient data)				
Other Notes	not included				
Subject Added Entries	not included				
Author and Title Added Entries	not included				
Local Call Number	lower left portion of entry	new line	–	–	3 spaces
Other	*-meaning unknown				

FORM Fig. 10: SAMPLE MAIN ENTRIES (Cont.)



UNIVERSITY OF TORONTO: ONTARIO NEW UNIVERSITIES LIBRARY
PROJECT: (entry 42 characters wide)

BX7795.W7P4

Peare, Catherine Owens
John Woolman, child of light; the
story of John Woolman and the Friends.
New York, Vanguard Press, 1954.
254p. illus.
Includes bibliography.
1. Friends, Society of 2. Woolman,
John, 1720-1772.

BROC ERIN GLPH SCAR TREN

No. of Columns per Page: 3

Elements In Catalog Entry	Include/ Not Include	New Line or Continuous?	Capital-ization	Line Justi-fication	Indenta-tions
Main Entry	dates not included	new line	upper-& lower-case	left column justified	–
Title	full title	new line	"	–	5 spaces
Imprint	full	continuous	"	–	–
Collation	size not included	new line	"	–	5 spaces
Series Notes	(insuffi-cient data)				
Other Notes	Bibliography	new line	"	–	5 spaces
Subject Added Entries	included	new line	"	–	5 spaces
Author and Title Added Entries	not included				
Local Call Number	call no. in upper right corner	new line		right justified	
Other	location information	double space new line	upper case		3 spaces

FORM Fig. 10: SAMPLE MAIN ENTRIES (Cont.)

ANNAPOLIS & ANNE ARUNDEL COUNTY LIBRARY: (entry varies—up to 60 characters wide)

YP 922.8   PEARE, Catherine O. John Woolman,
child of light. Vanguard 1954 illus
A B K L O R SC SP

No. of Columns per Page: 3

Elements In Catalog Entry	Include/ Not Include	New Line or Continuous?	Capital- ization	Line Justi- fication	Indenta- tions
Main Entry	dates not included middle initial only	new line	last name in capital letters	—	10 spaces
Title	short title only	continuous	upper-& lower case	—	—
Imprint	publisher & date only	continuous	" no punc- tuation	—	—
Collation	illustration statement only	continuous	lower case no punctu- ation	—	—
Series Notes	(insuffi- cient data)				
Other Notes	not included				
Subject Added Entries	not included				
Author and Title Added Entries	not included				
Local Call Number	call no. in upper left corner			left justified	
Other	location information	new line	upper case		10 spaces

FORM Fig. 10: SAMPLE MAIN ENTRIES (Cont.)

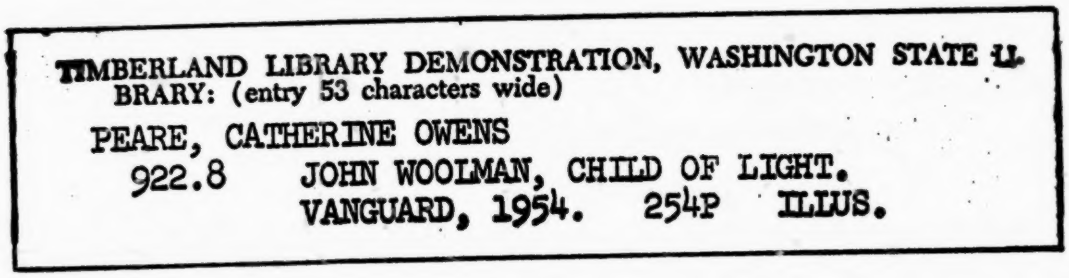
SAINT LOUIS JUNIOR COLLEGE DISTRICT: (entry 73 characters wide)

```
 210S PEARE, CATHERINE OWENS   922.8  P345  54
      JOHN WOOLMAN, CHILD OF LIGHT
```

No. of Columns per Page: 2

Elements In Catalog Entry	Include/ Not Include	New Line or Continuous?	Capital-ization	Line Justi-fication	Indenta-tions
Main Entry	dates not included	new line	all in capital letters	—	5 spaces
Title	short title only	new line	all in capital letters	—	5 spaces
Imprint	not included				
Collation	not included				
Series Notes	(insuffi-cient data)				
Other Notes	not included				
Subject Added Entries	not included				
Author and Title Added Entries	not included				
Local Call Number	upper right portion	continuous	—	—	—
Other	210S-meaning unknown	new line	—	left column justified	

FORM Fig. 10: SAMPLE MAIN ENTRIES (Cont.)



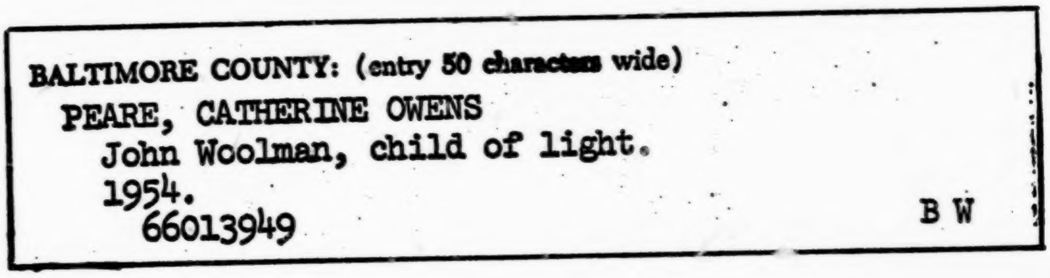
TIMBERLAND LIBRARY DEMONSTRATION, WASHINGTON STATE LIBRARY: (entry 53 characters wide)

PEARE, CATHERINE OWENS
922.8 JOHN WOOLMAN, CHILD OF LIGHT.
VANGUARD, 1954. 254P ILLUS.

No. of Columns per Page: 2

Elements In Catalog Entry	Include/ Not Include	New Line or Continuous?	Capitalization	Line Justification	Indentations
Main Entry	dates not included	new line	all in capital letters	left column justified	–
Title	short title only	new line	"	–	11 spaces
Imprint	publisher & date only	new line	"	–	11 spaces
Collation	size not included	continuous	"	–	–
Series Notes	(insufficient data)				
Other Notes	not included				
Subject Added Entries	not included				
Author and Title Added Entries	not included				
Local Call Number	under main entry	continuous on line with title	–	–	2 spaces
Other					

FORM Fig. 10: SAMPLE MAIN ENTRIES (Cont.)



BALTIMORE COUNTY: (entry 50 characters wide)

```
PEARE, CATHERINE OWENS
  John Woolman, child of light.
  1954.
     66013949                                B W
```

No. of Columns per Page: 2

Elements In Catalog Entry	Include/ Not Include	New Line or Continuous?	Capitalization	Line Justification	Indentations
Main Entry	dates not included	new line	all in capital letters	left column justified	–
Title	short title only	new line	upper-& lower-case	–	2 spaces
Imprint	date only	new line	–	–	2 spaces
Collation	not included				
Series Notes	(insufficient data)				
Other Notes	not included				
Subject Added Entries	not included				
Author and Title Added Entries	not included				
Local Call Number	call no. in lower right		–	right column justified	
Other	accession number	new line	–	–	5 spaces

FORM Fig. 10: SAMPLE MAIN ENTRIES (Cont.)

ANFORD UNIVERSITY MEYER LIBRARY: (entry 45 characters wide).

Peare, Catherine Owens
  John Woolman, child of light; the story of
  John Woolman and the Friends. Vanguard,
  1954. 254p   BX 7795.W7P4

No. of Columns per Page: 2

Elements In Catalog Entry	Include/ Not Include	New Line or Continuous?	Capital-ization	Line Justi-fication	Indenta-tions
Main Entry	dates not included	new line	upper-& lower-case	left column justify	–
Title	full title	new line	"	–	2 spaces
Imprint	publisher & date only	continuous	"	–	–
Collation	pagination only	continuous	"	–	–
Series Notes	(insuffi-cient data)				
Other Notes	not included				
Subject Added Entries	not included				
Author and Title Added Entries	not included				
Local Call Number	lower right corner	continuous	–	right column justify	–
Other					

FORM Fig. 10: SAMPLE MAIN ENTRIES (Cont.)

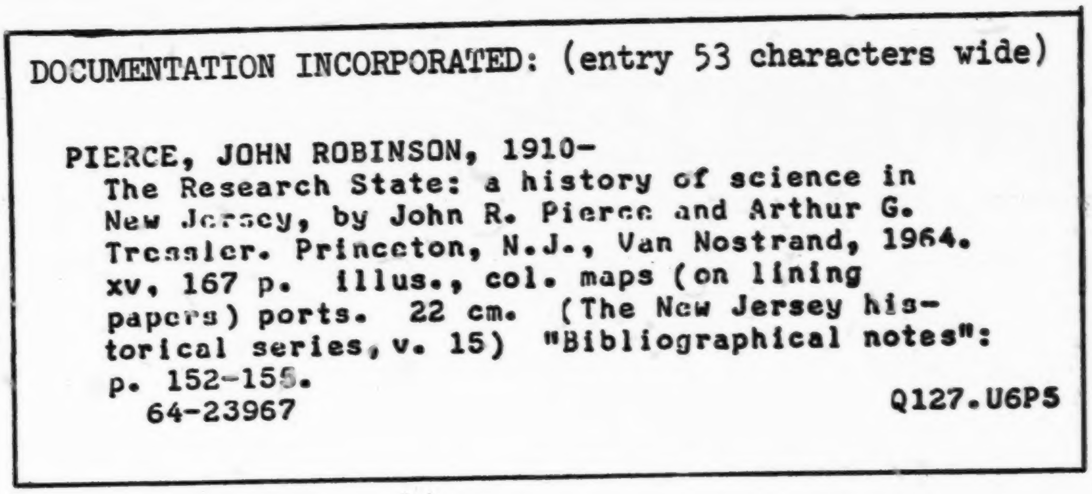
```
SANTA CLARA VALLEY LIBRARY SYSTEM:  (entry 50
     characters wide)

   PEARE, CATHERINE OWENS
      JOHN WOOLMAN, CHILD OF LIGHT; THE STORY OF JOHN
      WOOLMAN AND THE FRIENDS.  VANGUARD, 1954.
      254P.                                922.8 P345
      (AR BK CA CL CU LA MH QU)
```

No. of Columns per Page: 2

Elements In Catalog Entry	Include/ Not Include	New Line or Continuous?	Capitalization	Line Justification	Indentations
Main Entry	dates not included	new line	upper case	left column justified	—
Title	full	new line	"	—	3 spaces
Imprint	publisher & date only	continuous	"	—	—
Collation	pagination only	continuous	"	—	—
Series Notes	(insufficient date)				
Other Notes	not included				
Subject Added Entries	not included				
Author and Title Added Entries	not included				
Local Call Number	in lower right corner	continuous	—	right column justified	—
Other	union holdings symbols	new line	upper case	—	2 spaces

This sample was not taken directly from the Santa Clara Valley Library System's catalog; it was merely modeled after the system's <u>Catalog of Books</u>, July 1968.

FORM Fig. 10: SAMPLE MAIN ENTRIES (Cont.)



DOCUMENTATION INCORPORATED: (entry 53 characters wide)

PIERCE, JOHN ROBINSON, 1910-
The Research State: a history of science in
New Jersey, by John R. Pierce and Arthur G.
Tressler. Princeton, N.J., Van Nostrand, 1964.
xv, 167 p. illus., col. maps (on lining
papers) ports. 22 cm. (The New Jersey his-
torical series, v. 15) "Bibliographical notes":
p. 152-155.
64-23967 Q127.U6P5

No. of Columns per Page: ?

Elements In Catalog Entry	Include/ Not Include	New Line or Continuous?	Capital- ization	Line Justi- fication	Indenta- tions
Main Entry	full entry	new line	last name in capital letters	left column justified	-
Title	full plus author statement	new line	upper-& lower case	-	2 spaces
Imprint	full	continuous	"	-	
Collation	full	"	"	-	
Series Notes	included	"	"	-	
Other Notes	bibliography	"	"	-	
Subject Added Entries	not included				
Author and Title Added Entries	not included				
Local Call Number	lower right corner	new line	-	right column justified	
Other	Library of Congress card number	on same line as call no.	-	-	4 spaces

This sample was taken from a brochure by Documentation Incorporated entitled "Why Book Catalogs?"

III. FORMATION OF ENTRIES

The following tables (FORM Fig. 11) will present the format and data elements for each type of entry discussed in Section II (FORM Fig. 8: Alphabet Group Samples). The data elements MARC tags and control information for formatting are specified. To illustrate: FORM page is a main entry table with each element identified in relation to its specification line. Each of the 16 tables follows this same format: an example of the entry and a description in tabular form of the elements in the entry with the entry and element specific table format controls. The function of each of the columns is described with the illustration.

In addition to the tables, this section contains a general set of formatting rules.

The entries thus specified form our recommended structure. The user who wishes to deviate from these recommendations may alter the tables, using the table, element, and column numbers. Data not given in our recommended format for a full entry includes: bibliographic prices, overseas acquisition number, standard book number, tracings, Library of Congress card number, and any other similar information found below the tracings or near the guardhole.

GENERAL FORMATTING ALGORITHMS

Rule 1:

When the main entry is printed (1xx), print the main entry and any filing title (240) that might be present.

Rule 2:

The insertion of a period after a name heading (1xx or 7xx) should occur unless the last character in the field is a hyphen [-], a right parenthesis [ )], or already a period.

Rule 3:

Short titles and the title portion of author-title series are to be terminated with a period. All other punctuation to the immediate left is to be eliminated (. ; : ?).

Rule 4:

If there is a MARC tag 240 anywhere, it is interposed between the main entry and the short title and is enclosed in brackets.

Rule 5:

Delimiters and codes are not to be printed--suppress them everywhere.

Rule 6:

When MARC tag 501 (a "bound with" note) occurs, it is to be put on a new line. That line and subsequent lines of the note are to be indented 7 spaces.

Rule 7:

The library call number and holdings information will be right justified and will be the last item in any entry. If it will fit on the last line of the entry, with four spaces preceding it, it will be printed there; otherwise, it will be printed on the next line below, right justified.

Rule 8:

If at any time tag 100, 600 or 700 has delimiter $e, suppress the $e and the comma preceding it.

GENERAL FORMATTING ALGORITHMS (CONT.)

Rule 9:

The print program will not break up words in printing the lines of an entry but will test to see if there are enough blank spaces on the line to accommodate a word before printing it.

Rule 10:

If the publisher (260 Ind. 1 = 1) is also the Main Entry (1xx) of the work whose entry is being printed, the publisher will not be printed in the imprint field.

ENTRY SPEC TABLES: TERMS DEFINED

Fields to be Included. Here, listed in order of appearance in the entry, are the MARC tags and relevant indicators for elements of cataloging information to be included in the entry named at the top of the table. If the delimiter column is blank, it means that any or all delimiters used with that field are to be printed with the exception of delimiter $e with tags 100, 600, 700 which is suppressed whenever it occurs. If a delimiter is indicated in this column, it must be present in the record.

In Sequence Without Reset. This signals that a line is not to be skipped for that element, but it is to follow immediately, if possible, after the preceding element. This is indicated for each item by an affirmative or negative answer.

Beginning of Field Condition. This is provided for indicating spacing and special marks of punctuation at the beginning of a field if not already supplied. Print options are available, e.g., upper case, overprint, underscore; however, unless otherwise indicated, the fields are in standard upper and lower case.

End of Field Condition. This is provided for indicating marks of punctuations to be printed at the end of the catalog element if not already supplied.

Field Condition and Action. This is provided for suppressing, replacing, or inserting field elements under certain conditions.

The Rules referred to in the tables are found among those on the previous page. The Print Message File is found on FORM Fig. 12 and may be accessed either by message number or the appropriate MARC tag.

FORM FIG. 11: SIXTEEN ENTRY SPECIFICATION TABLES

FORM Fig. 11: SAMPLE TABLE

Entry Type: AUTHOR MAIN ENTRY

Example: Pierce, John Robinson, 1910- ⑧ ⑨ ⑩
③ → The Research State: a history of science in New Jersey
⑤ → [by] John R. Pierce [and] Arthur G. Tressler.
⑦ → Princeton, N.J., Van Nostrand, 1964. xv, 167 p.
⑪ → illus., col. maps (on lining papers) ports. 22 cm. ⑫
⑬ → (The New Jersey historical series, v. 15)
⑭ → "Bibliographical notes": p. 152-155. ⑮ Q127.U6P5

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Author main entry 100, 110, 111	—	—	—	no	left column justify	Rule 2	If not first time	suppress
2. Supplied title 240	—	b̸	$a	no	5 spaces left bracket	right bracket		
3. Short title 245	—	b̸	$a	no	5 spaces			
4. Remainder of title 245	—	b̸	$b	yes				
5. Remainder of title page transcription 245	—	b̸	$c	yes				
6. Edition statement 250	b̸	b̸		yes	2 spaces			
7. Place 260	—	b̸	$a	yes	2 spaces			
8. Publisher 260	—	b̸	$b	yes			If Ind 1 = 1	suppress
9. Date 260	—	b̸	$c	yes				
10.Pagination 300	b̸	b̸	$a	yes	2 spaces			
11.Illustration 300	b̸	b̸	$b	yes				
12.Size 300	b̸	b̸	$c	yes		print message no.1		
13.Series notes 4xx	—	—		yes	2 spaces left parenthesis	right parenthesis		
14.All other notes 5xx	b̸	b̸		yes	2 spaces if 505 Ind 1 = 1 print message no. 7		if 501 present	print on new line indent entire note 7 spaces
15.Library call no. & location symbols 090				yes	Rule 7			

FORM Fig. 11: TABLE NO. 1 **100,110,111**

Entry Type: AUTHOR MAIN ENTRY

Example: Gann, Lewis, 1924-
Huggins of Rhodesia; the man and his country, by L.H. Gann and M. Gelfand. London, Allen & Unwin [1964] 285 p. illus., ports. 23cm. "Publications by Huggins, G.M.": p. [273]-274. Bibliography: p. 274-278.
DT960.M3G3

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Author main entry 100, 110, 111	—	—	—	no	left column justify	Rule 2	If not first time	suppress
2. Supplied title 240	—	b̸	$a	no	5 spaces left bracket	right bracket		
3. Short title 245	—	b̸	$a	no	5 spaces			
4. Remainder of title 245	—	b̸	$b	yes				
5. Remainder of title page transcription 245	—	b̸	$c	yes				
6. Edition statement 250	b̸	b̸		yes	2 spaces			
7. Place 260	—	b̸	$a	yes	2 spaces			
8. Publisher 260	—	b̸	$b	yes			If Ind 1 = 1	suppress
9. Date 260	—	b̸	$c	yes				
10. Pagination 300	b̸	b̸	$a	yes	2 spaces			
11. Illustration 300	b̸	b̸	$b	yes				
12. Size 300	b̸	b̸	$c	yes		print message no.1		
13. Series notes 4xx	—	—		yes	2 spaces left parenthesis	right parenthesis		
14. All other notes 5xx	b̸	b̸		yes	2 spaces if 505 Ind 1 = 1 print message no. 7		if 501 present	print on new line indent entire note 7 spaces
15. Library call no. & location symbols 090				yes	Rule 7			

700, 710, 711, 750 Ind 2 = 0

FORM Fig. 11: Table No. 2

Entry type: ALTERNATE AUTHOR ADDED ENTRY

Example: Gelfand, Michael.
Huggins of Rhodesia. See under Gann, Lewis H., 1924-
DT960.M3G3

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim.				Condition	Action
1. Alternate author added entry 700, 710, 711, 750	—	0	any delim. except ‡t.	no	left column justify	Rule 2	If not first time	suppress
2. Short title 245	—	b̸	$a	no	5 spaces	Rule 3		
3. Print message no. 3				yes	2 spaces	one space		
4. Main entry 1xx	—	—		yes		Rule 2		
5. Library call number & location symbols 090				yes	Rule 7			

700, 710, 711 Ind 2 = 2
delim = $t

FORM Fig. 11: Table No. 3

Entry type: ANALYTIC AUTHOR-TITLE ADDED ENTRY

Example: Garnier, Robert, 1544?-1590.
Bradamante. (In Garnier, Robert, 1544?-1590. Les Juifves.)
PQ1625.G2A6 1949

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Analytic author-title added entry (author portion) 700, 710, 711	—	2	any & all delims up to $t	no	left column justify	Rule 2	If not first time	suppress
2. Analytical author-title added entry (title portion) 700, 710, 711, 750	—	2	$t	no	5 spaces	Rule 3		
3. Print message no. 4				yes	2 spaces left parenthesis	1 space		
4. Main entry 1xx	—	—		yes		Rule 2		
5. Short title 245	—	b̸	$a	yes	2 spaces	1.Rule 3 2.right parenthesis		
6. Lib. call number & locations 090				yes	Rule 7			

FORM Fig. 11: Table No. 4

400, 410, 411, 800, 810, 811
all delimiters except no $v present

Entry type: AUTHOR-TITLE SERIES ADDED ENTRY: UNNUMBERED

Example: Falk Foundation Program of Political Training and Research.
Seminar series.
The Library has the following titles in this series:
Gallagher, John Frederick, 1936- School board politics
in Los Angeles County. Ref.: LB2831.G135s

Gaskell, Elizabeth Cleghorn (Stevenson), 1810-1865. Novels
and tales.
The library has the following titles in this series:
Gaskell, Elizabeth Cleghorn (Stevenson), 1810-1865.
Ruth. PR4710.R8

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Author-title series added entry 400, 410, 411, 800, 810, 811	—	—	any delims except $v	no	left column justify	Rule 2	If not first time	suppress
2. Print message no. 6				no	5 spaces		If not first time	suppress
3. Main entry 1xx	—	—		no	5 spaces	Rule 2		
4. Short title 245	—	b̸	$a	yes	2 spaces	Rule 3		
5. Library call numbers & locations 090				yes	Rule 7			

400, 410, 411, 800, 810, 811
$v must be present

FORM Fig. 11: Table No. 5

Entry type: AUTHOR-TITLE SERIES ADDED ENTRY: NUMBERED

Example:

Leeds, Eng. University. Institute of Education. Paper.
The Library has the following titles in this series:
No. 1. Leeds, Eng. University. Institute of Education. Yorkshire field studies (series 1).
DA670.Y6L4 1967

Missouri. University. Education series.
The Library has the following titles in this series:
No. 80. Garrett, Pauline Bertie Gillette, 1917- The identification of certain competencies in teaching vocational home economics. LB5.M69b no.80

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Author-title added entry 400, 410, 411, 800, 810, 811	—	—	any delims up to $v	no	left column justify	Rule 2	If not first time	suppress
2. Print message no. 6				no	5 spaces		If not first time	suppress
3. Series number from author-title a.e. 400, 410, 411, 800, 810, 811	—	—	$v	no	5 spaces	Rule 3		
4. Main entry 1xx	—	—	—	yes	2 spaces	Rule 2		
5. Short title 245	—	—	$a	yes	2 spaces	Rule 3		
6. Call number & locations 090				yes	Rule 7			

700, 710, 711, 750 Ind 2 = 1
no delim. $t

FORM Fig. 11: Table No. 6

Entry type: CONNECTING AUTHOR ADDED ENTRY

Example: Silvers, Robert.
See also the following:
The Gangrene; translated from the French by Robert Silvers. New York, L. Stuart [1960] 96 p. 22cm. By 7 Algerians living in France at the time of their arrest. HV6295.F8G35

Truscott, Samuel John.
See also the following:
Beyschlag, Franz Heinrich August, 1856- The deposits of the useful minerals & rocks; their origin, form, and content, by Prof. Dr. F. Beyschlag... tr. by S.J. Truscott... London, Macmillan and co., limited, 1914 2 v. illus. (incl. maps) diagrs. 22cm. 553.1 B57

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Connecting author added entry 700, 710, 711, 750		1	all delims up to $t	no	left column justify	Rule 2	If not first time	suppress
2. Print message no. 2				no	7 spaces		If not first time	suppress
3. Main entry 1xx				no	5 spaces	Rule 2		
4. Short title 245			$a	yes	2 spaces			

See Table 1
Elements 4-15

700, 710, 711, 750 Ind 2 = 1
any delim PLUS $t

FORM Fig. 11: Table No. 7

Entry type: CONNECTING AUTHOR-TITLE ADDED ENTRY

Example: James, Henry, 1843-1916. Washington Square.
See also the following:
Goetz, Ruth Goodman. The heiress; a play by Ruth & Augustus Goetz, based on the novel Washington Square by Henry James. With a foreword by Sir Ralph Richardson. London, Reinhardt & Evans [1949, c1948] 119 p. plates. 23cm. PS3513.0254H4

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Connecting author-title added entry (author portion) 700, 710, 711, 750		1	all delims up to $t	no	left column justify	Rule 2	If not first time	suppress
2. Connecting author-title added entry (title portion) 700, 710, 711, 750		1	$t	yes	2 spaces	Rule 3	If not first time	suppress
3. Print message no. 2				no	7 spaces		If not first time	suppress
4. Main entry 1xx				no	5 spaces	Rule 2		
5. Short title 245			$a	yes	2 spaces			

See Table 1
Elements 4-15

245 with no lxx

FORM Fig. 11: Table No. 8

Entry type: TITLE MAIN ENTRY

Example: My secret life. Introd. by G. Legman. New York, Grove
Press, 1966. 11v.(lxiii, 2359 p.) in 2. 24 cm. Issued
in a case. Originally published anonymously in an ed.
of 6 copies in Amsterdam about 1890. HQ471.M313

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
[1]Title main entry 245 with no lxx	-	b̸		no	left column justify			

[See Table 1
Elements 6-15]

tag 130 any indicators
any delimiters

FORM Fig. 11: Table No. 9

Entry type: UNIFORM TITLE MAIN ENTRY

Example: Orfeo (Middle English poem)
Sir Orfeo; edited by A.J. Bliss. [London] Oxford University Press, 1954. li, 70 p. 23 cm. (Oxford English monographs) Contains the text of the poem in three versions: the Auchinleck ms., Ms. Harley 3810, and Ms. Ashmole 61. PR2065.06 1954

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
[1]Uniform Title Main Entry 130	b̸	-	-	no	left column justify	Rule 2	If not first time	suppress

See Table 1
Elements 3-15

245 with lxx Ind 1 = 1

FORM Fig. 11: Table No. 10

Entry type: TITLE ADDED ENTRY TRACED SAME

Example: John Woolman, child of light. See under Peare, Catherine Owens.
B W543

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Title added entry 245 with lxx	1	ɓ	$a	no	left column justify	Rule 3		
2. Print message no. 3				yes	2 spaces	one space		
3. Main entry lxx				yes		Rule 2		
4. Call no. & locations 090				yes	Rule 7			

FORM Fig. 11: Table No. 11 730, 740 Ind 2=0

Entry type: TITLE ADDED ENTRY TRACED DIFFERENTLY

Example: Human growth. See under Garn, Stanley Marion, 1922-
Methods for research in human growth. QP84.G186m

Retirement in Mexico. See under Garrett, M. Truett. A
guide to retirement in Mexico. F1216.G36 1965

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Title added entry 730, 740	ƀ	0		no	left column justify	Rule 3		
2. Print message no. 3				yes	2 spaces	1 space		
3. Main entry 1xx	—	—		yes		Rule 2		
4. Short title 245	—	ƀ	$a	yes	2 spaces	Rule 3		
5. Call number & location 090				yes	Rule 7			

730, 740 Ind 2=1

FORM Fig. 11: Table No. 12

Entry type: TITLE CONNECTING ADDED ENTRY

Example: Arthur, King (Romances, etc.)
See also the following:
Gawain and the Grene Knight. Sir Gawayne and the Green Knight, an alliterative romance-poem (ab. 1360 A.D.) Re-edited from Cotton m.s. Nero, A.X., in the British Museum, by Richard Morris. 2d ed., rev., 1869. London, Published for the Early English Text Society by N. Trübner, 1864 [i.e. 1869] 124 p. (Early English Text Society. [Publications] Original series, 4) PR1119.E4 no.4

Bulletin of the Atomic Scientists.
See also the following:
The Challenges of space. Hugh Odishaw, editor. Contributors: Ralph S. Cooper [and others] Foreword by Eugene Rabinowitch. [Chicago] University of Chicago Press [1962] 379 p. illus. 22cm. First published as a special issue of the Bulletin of the Atomic Scientists, May-June, 1961; here expanded and brought up to date. TL794.5.C43 1962

Fields to be included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind	Ind 2	Delim				Condition	Action
1. Title connecting added entry 730, 740	ƀ	1		no	left column justify	Rule 2	If not first time	suppress
2. Print message no. 2				no	7 spaces		If not first time	suppress
3. Main entry 1xx	—	—		no	5 spaces	Rule 2		
4. Short title 245	—	ƀ	$a	yes	2 spaces			

[See Table 1
Elements 4-15]

FORM Fig. 11: Table No. 13 730, 740 Ind 2=2

Entry type: TITLE ANALYTIC ADDED ENTRY

Example: . Gawain and the Grene Knight. (*In* Gardner, John Champlin, 1933- The complete works of the Gawain-poet.)
PR1203.G36

Harlequin's invasion. (*In* Garrick, David, 1717-1779. Three plays.)
PR3465.A5S8

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Title added entry 730, 740	ƀ	2		no	left column justify	Rule 2		
2. Print message no. 4				yes	2 spaces left parenthesis	one space		
3. Main entry 1xx	—	—		yes		Rule 2		
4. Short title 245	—	ƀ	$a	yes	2 spaces	1.Rule 3 2.Right parenthesis		
5. Library call no. & locations 090				yes	Rule 7			

FORM Fig. 11: Table No. 14 | 440, 840 with $a & no $v

Entry type: TITLE SERIES ADDED ENTRY: UNNUMBERED

Example: . Cancer monograph series.
The Library has the following titles in this series:
Ambrose, Edmund Jack. The cancer cell in vitro.
QZ206.A49

. The Faber monographs on pottery and porcelain.
The Library has the following titles in this series:
Garner, Harry Mason, Sir, 1891- Oriental blue and white.
NK4565.G33 1964

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Title series added entry 440, 840	b̸	b̸	$a with no $v	no	left column justify	Rule 2	If not first time	suppress
2. Print message no. 6				no	5 spaces		If not first time	suppress
3. Main entry 1xx	—	—		no	5 spaces	Rule 2		
4. Short title 245	—	b̸	$a	yes	2 spaces	Rule 3		
5. Library call no. & locations 090				yes	Rule 7			

FORM Fig. 11: Table No. 15 　　　**440, 840 with $a & $v**

Entry type: TITLE SERIES ADDED ENTRY: NUMBERED

Example: The Civilization of the American Indian series.
The Library has the following titles in this series:
81. Kilpatrick, Jack Frederick. The shadow of
Sequoyah. PC2121.K5

English linguistics: 1500-1800; a collection of facsimile
reprints.
The Library has the following titles in this series:
No. 66. A Plaine pathway to the French tongue, 1575.
PC2121.P64 1575a

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Title series added entry 440, 840	b̸	b̸	$a	no	left column justify	Rule 2	If not first time	suppress
2. Print message no. 6				no	5 spaces		If not first time	suppress
3. Series number from title series added entry 440, 840	b̸	b̸	$v	no	5 spaces	Rule 3		
4. Main entry 1xx	—	—		no	5 spaces	Rule 2		
5. Short title 245	—	b̸	$a	yes	2 spaces	Rule 3		
6. Library call number & locations 090				yes	Rule 7			

FORM Fig. 11: Table No. 16 | 600, 610, 611, 630, 650, 651, 652

Entry type: SUBJECT (All types: personal, corporate, conference name; uniform title heading; topical; geographic; political jurisdiction)

Example: [See attached sheet]

Fields to be Included				In Sequence Without Reset	Condition: Beginning of Field	Condition: End of Field	Field Action	
MARC tags	Ind 1	Ind 2	Delim				Condition	Action
1. Subject added entry 600, 610 611, 630, 650, 651, 652	—	—	—	no	left column justify	delete period	a.If not first time b.Print all in capitals	a.suppress b. print message no. 5
2. Main entry 1xx	—	—	—	no	5 spaces	Rule 2		
3. Short title 245			$a	yes	2 spaces			

[See Table 1
Elements 4-15]

FORM Fig. 11: Table No. 16 (cont.)

Entry type: SUBJECT

Examples:

1. Personal name

a. DONNE, JOHN, 1573-1631--CONCORDANCES
Combs, Homer Carroll. A concordance to the English poems of John Donne, by Homer Carroll Combs and Zay Rusk Sullens. Chicago, Packard [c1940] ix, 418 p. 27cm.
PR2248.A3

b. ELIOT, THOMAS STEARNS, 1888-1965. FOUR QUARTETS.
Preston, Raymond. Four quartets rehearsed; a commentary on T.S. Eliot's cycle of poems. London, Sheed & Ward, 1946. viii, 64 p. 21cm.
PS635.Z9M134

c. FREUD, SIGMUND, 1856-1939
Doolittle, Hilda. Tribute to Freud, by H.D. With unpublished letters by Freud to the author. [New York] Pantheon [1956] 180 p. 21cm.
PS3507.0726T68

2. Corporate or Conference name

FRIENDS, SOCIETY OF
Peare, Catherine Owens. John Woolman, child of light; the story of John Woolman and the Friends. By Catherine Owens Peare. New York, Vanguard Press, 1954. 254 p. illus. 23cm. Includes bibliography.
B W543

3. Uniform Title Heading

LORD'S PRAYER
Garofalo, Salvatore. Il "Pater noster." [Torino] Edizioni Radio italiana [1955] 86 p. facsim. (Quaderni della radio, 41)
PN1991.15.Q3 v.41

4. Topical

PELL'S POINT, BATTLE OF, 1776
Abbatt, William, 1857- The battle of Pell's point (or Pelham) October 18, 1776. Being the story of a stubborn fight. With a map, and illustrations from original photographs and family portraits. By William Abbatt. New York, 1901. 2 p. l., 26 numb. l. front., pl., port., map. 27cm. Bibliography: l. 24-26. Edition of 20 copies on large paper. Leaves 10-13 and inclusive plates duplicated. Leaves printed on one side only.
973.3 A12

FORM Fig. 11: Table No. 16 (cont.)

Entry type:

Examples:

5. Political jurisdiction

MEXICO--DESCRIPTION AND TRAVEL--1951-

Garrett, M. Truett. A guide to retirement in Mexico; double your income, double your fun [by] M. Truett Garrett, Sr. Rev., greatly enl. Brownsville, Tex., Gary Press [1965] 208 p. 23cm. Bibliography: p. 204-205. F1216.G36 1965

FORM Fig. 12: MESSAGE FILE FOR TABLES 1-16

Condition	Ind 1	Ind 2	Delim.	Message	Message Number
Designation of size 300	ƀ	ƀ	$c	cm.	1
Connecting (uniform) title added entry 730, 740	ƀ	1		See also the following:	2
Connecting author added entry 700, 710, 711, 750	-	1			
Connecting author-title added entry 700, 710, 711, 750	-	1	$t		
Title traced same 245 with 1xx	1	ƀ		See under	3
Title added entry traced differently 730, 740	ƀ	0			
Alternate author added entry 700, 710, 711, 750	-	0			
Alternate author-title added entry 700, 710, 711, 750	-	0	$t		
Author analytic added entry 700, 710, 711, 750	-	2		In	4
Title analytic added entry 730, 740	ƀ	2			
Subject (all types) 6xx	-	-		Print in CAPS	5
Title series added entry 440, 840	-	-		The Library has the following titles in this series:	6
Author-title series added entry 400, 410, 411, 800 810, 811					
Contents Note (Formatted) 505	1	ƀ		CONTENTS.--	7

IV. HEADINGS AND INDENTATIONS

There are two areas in which the format of the book catalog is clearly dependent upon the sequence of the entries in the file: 1) order of data elements, and 2) print/suppress heading. The first case is strictly a logical dependancy and relates to suborder arrangements within a bibliographic group or alphabet, e.g., within the subject alphabet. It would be illogical to suborder by title, for example, and then print main entry before the title. The second case--heading suppression--is both a logical and a programming dependence and will be discussed extensively in this section.

The CSL-PC system recognizes three basic levels of ordering hierarchy: 1) heading form (e.g., single surnames precede non-single); 2) bibliographic function (e.g., main entries precede series added entries); 3) suborder arrangement (e.g., arrangement of subject added entries by title, author statement and date). A full discussion of these three levels is found in Chapter FILE. Here we are concerned only with the second level: Bibliographic function.

Each bibliographic function represents a collection of entry types; there are five such collections or groups currently defined for the CSL-PC system: (see also FORM Figs. 7, 8)

BIBLIOGRAPHIC GROUP (as defined by function)	ENTRY TYPES WITHIN GROUP
1.0 AUTHOR MAIN ENTRY	Author main entry Author alternate added entry Author analytic added entry Author-title series added entry Proper name not capable of authorship added entry
1.1 AUTHOR ADDED ENTRY	Author connecting added entry
2.0 TITLE	Title main entry Uniform title main entry Title traced same added entry Title traced different added entry
2.1 SERIES	Title series added entry
3.0 SUBJECT	All subject added entries Main-entry-is-subject added entry

Every entry in each bibliographic group is controlled by the presence of a unique function code which causes the proper sorting sequence to be effected. In terms of output, each separate bibliographic group is gathered into a separate "alphabet".

An alphabet, in addition to gathering together entries of similar bibliographic function, has two central characteristics. First, it may have a unique subarrangement pattern, distinct from other alphabets. Second (and more germane to our current discussion), each alphabet is introduced by a printed heading, although within the alphabet the heading is not printed.

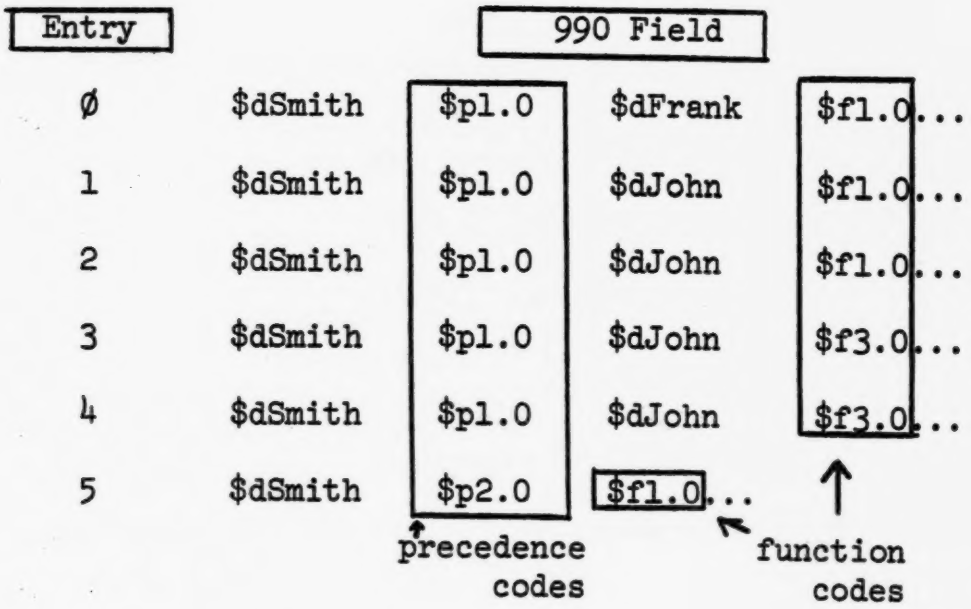
Smith, John	(PRINT HEADING - NEW ALPHABET 1.0)
Entry 1.	(Suppress)
Entry 2.	(Suppress)
SMITH, JOHN (SUBJECT)	(PRINT HEADING - NEW ALPHABET 3.0)
Entry 3.	(Suppress)
Entry 4.	(Suppress)
Smith Family	(PRINT HEADING - NEW HEADING)
Entry 5.	

The format program then needs to be able to identify similar headings (Smith, John) and distinguish separate alphabets (1.1, 3.0).

The requirements above can be satisfied by means of the special file sequence parameter data field 990, described in detail in Section III of Chapter FILE. To review briefly, the following are the subfields of data field 990:

$a - address of file sequence parameter data
$d - file sequence parameter data
$f - bibliographic function code
$p - heading form precedence code

If a sequence parameter in the 990 field is less than ten characters long, it is carried as data; otherwise it is expressed as an indirect address. The following example shows the sequence of 990 fields in the five entries used as examples above.



Entry	990 Field			
0	$dSmith	$pl.0	$dFrank	$fl.0...
1	$dSmith	$pl.0	$dJohn	$fl.0...
2	$dSmith	$pl.0	$dJohn	$fl.0...
3	$dSmith	$pl.0	$dJohn	$f3.0...
4	$dSmith	$pl.0	$dJohn	$f3.0...
5	$dSmith	$p2.0	$fl.0...	

The algorithm for the format program, then, can be illustrated by considering the 990 field up through and including the $f (function code) subfield; three cases are possible.

Case 1: If entry$_{i+1}$ completely matches entry$_i$, then both are in the same alphabet of the same heading, and the heading is to be suppressed. Example:

Entry i: $dSmith $pl.0 $dJohn $fl.0
Entry i+l: $dSmith $pl.0 $dJohn $fl.0 (suppress heading)

Case 2: If entry$_{i+1}$ matches entry$_i$ up to but not including the function code subfield, then both entries belong to different alphabets (i.e. bibliographic groups) of the same heading, and the heading needs to be printed in a form appropriate to the alphabet it is introducing. Example:

Entry i: $dSmith $pl.0 $dJohn $fl.0
Entry i+l: $dSmith $pl.0 $dJohn $f3.0 (print heading)

Case 3: If entry$_{i+1}$ does not match entry$_i$ up to the $f subfield, then entry$_{i+1}$ belongs to another heading, and the heading should be printed. Example:

Entry i: $dSmith $pl.0 $dFrank $fl.0
Entry i+l: $dSmith $pl.0 $dJohn $fl.0 (print heading)

* * * *

Indentation. FORM Fig. 13 illustrates five basic patterns of line indentation. The patterns are formed by the left margin configurations created by heading and body entry lines and their continuation lines (required if the data element exceeds the column width). In the Figure the MARC entry types which exhibit each specific pattern are given, along with an example of each indentation structure.

Several generalities become evident. For example, the first line of an entry is always left column justified. Author and title main entries have non-specified body lines indented 5 spaces; all added entries have non-specified body lines indented 7 spaces. ("Specified" lines are those whose indentations are specifically given in the specification tables in Section III, FORM Fig. 11.

V. PAGE LAYOUT

This section presents some of the wide range of variations in the page layout of a book-form catalog. Certain of these features are displayed in the page samples in Section I, FORM p. 7; additional ones are outlined below. In this section, several recommendations are made, and the continuation patterns for the entries are presented in detail.

FEATURES OF A PAGE LAYOUT:

1. Area of the page in number of characters in width and in length, both before and after reduction.
2. The size of the completed catalog page and the amount of reduction tolerated.
3. Number of columns per page.
4. Parameters across the page:
    a. Margin and column dimensions in characters per column and ratios, e.g., 8-character central margin, 45 characters per column in width.
    b. Position of page numbers, e.g., left, middle, or right on line.
    c. Position of running heads, e.g., left, middle, or right on line.
    d. Position of author top and bottom notes, e.g., left, middle, or right on line.
    e. Indentation of each line of an entry, e.g., 5 spaces.
5. Parameters down the page:
    a. Position of page numbers, e.g., number of lines from top or from bottom of the page.
    b. Position of running heads, e.g., number of lines from top of page.
    c. Position of keys at the top of each page indicating which letters are included on that page ("Head and foot" notes), e.g., number of lines from top of page.
    d. Amount of space between entries, e.g., 2 lines.
6. Splitting of entries between columns.
7. Repetition of entry headings on columns when the heading has been carried over from the previous column.

RECOMMENDATIONS. The format suggested in Catalogs in Book Form is that of a 8 1/2" x 11" page with 3/4" margin on the left, and 1/2" margin on the remaining three sides (print area 7 1/4" x 10").[1] The page is divided into two columns, each 60 characters wide and 104 lines long with a 6 character space between columns. This assumes a 68% reduction in size of material from the computer printer. J. L. Dolby in his article "The Influence of Typography on the Cost of Printed Catalogs,"[2] however, suggests that a 50% reduction might be more satisfactory. This should be given consideration. We suggest that two lines be left between entries, and that a main heading or subheading be printed at the bottom of a column only if one more line of printing can be added after the heading. At the start of each new column, any main heading and subheadings that are carried over from the previous column could be repeated with the note "(Cont.)". Keys at the top of each page to indicate headings included therein would be of value.

Additional features in a book catalog concern the catalog as a whole:

1. Form of division: dictionary; author, title and subject; names, titles and subjects; author/title and subject.
2. Paging can be continuous or can begin anew with each volume.
3. Letters of the alphabet can begin on a new page or can be continuous.
4. Volumes can begin and end mid-letter (e.g., A-DEA) or can consist of discrete letters (e.g., A-D, E-G). Letters included in each volume are imprinted on the spine.
5. Each volume should have a title page and several pages (if necessary) of explanation on the use of the catalog.
6. Material for binding, of course, will differ for the catalogs, supplements, and shelf lists. They can be buckram oversewn, perfect bound, wire bound, spiral bound, and in loose leaf or in post binders.
7. Use of different colors for the various catalog divisions (names, titles, subjects, etc., catalogs) is advisable.

---

[1] Cartwright, K. op. cit. p. 3.

[2] Dolby, J.L., et al. An Evaluation of the Utility and Cost of of Computerized Catalogs. p. 71-81.

FORM Fig. 13: LINE INDENTION/CONTINUATION PATTERNS FOR ENTRY STRUCTURES

STRUCTURE MODEL I:

Entry Types:

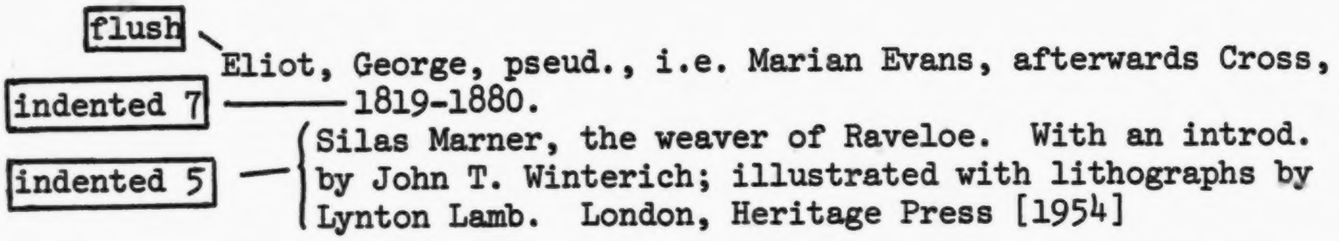
- 1xx
- 700, 710, 711 Ind. 2 = 0
- 700, 710, 711 Ind. 2 = 2

Indention Pattern Created:

Heading: First line flush left, subsequent lines indented 7 spaces.

Body: All lines indented 5 spaces.

Example (Tag 100):



Eliot, George, pseud., i.e. Marian Evans, afterwards Cross,
1819-1880.
Silas Marner, the weaver of Raveloe. With an introd.
by John T. Winterich; illustrated with lithographs by
Lynton Lamb. London, Heritage Press [1954]

STRUCTURE MODEL II:

Entry Types:

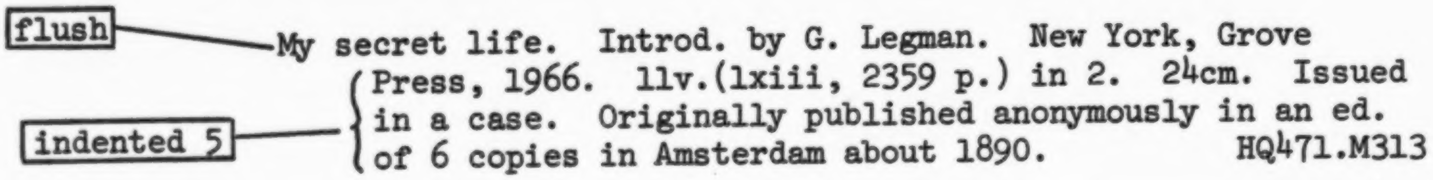
- 245 with or without 1xx
- 730, 740 Ind. 2=0
- 730, 740 Ind. 2=2

Indention Pattern Created:

Heading: First line flush left, subsequent lines indented 5 spaces.

Body All lines indented 5 spaces.

Example (Tag 245 with no 1xx):



My secret life. Introd. by G. Legman. New York, Grove
Press, 1966. 11v.(lxiii, 2359 p.) in 2. 24cm. Issued
in a case. Originally published anonymously in an ed.
of 6 copies in Amsterdam about 1890. HQ471.M313

STRUCTURE MODEL III:

Entry Types:

- 4xx
- 8xx

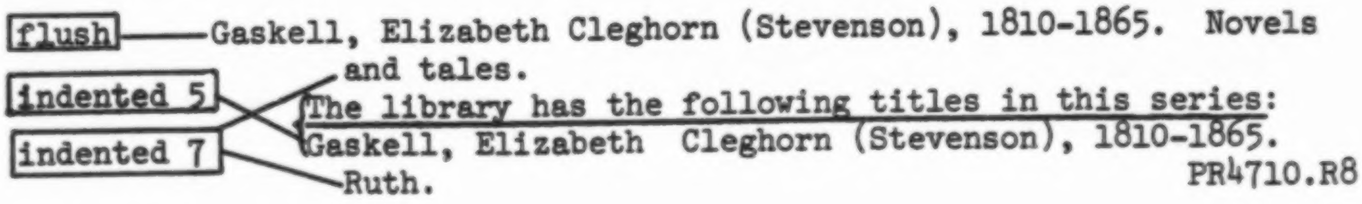
Indention Pattern Created:

Heading: First line flush left, subsequent lines indented 7 spaces.

Print Message: Indented 5 spaces.

Body: First line indented 5 spaces, Subsequent lines indented 7 spaces.

Example (Tag 400):



Gaskell, Elizabeth Cleghorn (Stevenson), 1810-1865. Novels
and tales.
The library has the following titles in this series:
Gaskell, Elizabeth Cleghorn (Stevenson), 1810-1865.
Ruth. PR4710.R8

FORM FIG. 13 (CONT.)

STRUCTURE MODEL IV:

Entry Types:

7xx Ind. 2 = 1

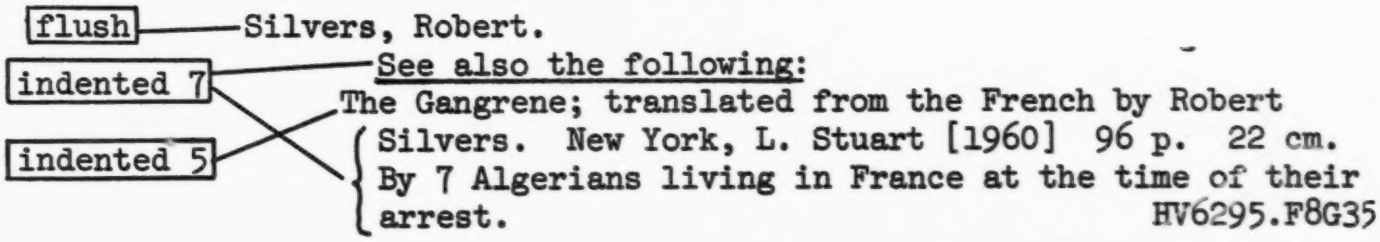
Indention Pattern Created:

Heading: First line flush left, subsequent lines indented 7 spaces.

Print Message: Indent 7 spaces.

Body: First line indented 5 spaces, subsequent lines indented 7 spaces.

Example (Tag 700):



Silvers, Robert.
See also the following:
The Gangrene; translated from the French by Robert
Silvers. New York, L. Stuart [1960] 96 p. 22 cm.
By 7 Algerians living in France at the time of their
arrest. HV6295.F8G35

STRUCTURE MODEL V:

Entry Types:

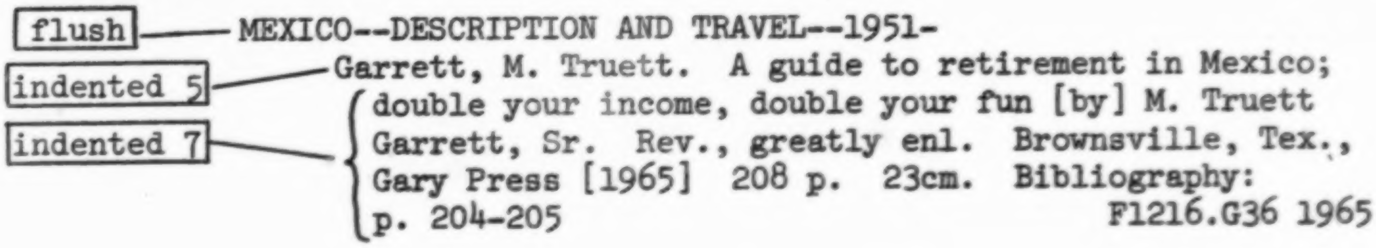
6xx

Indention Pattern Created:

Heading: First line flush left, subsequent lines indented 7 spaces.

Body: First line indented 5 spaces, subsequent lines indented 7 spaces.

Example (Tag 652):



MEXICO--DESCRIPTION AND TRAVEL--1951-
Garrett, M. Truett. A guide to retirement in Mexico;
double your income, double your fun [by] M. Truett
Garrett, Sr. Rev., greatly enl. Brownsville, Tex.,
Gary Press [1965] 208 p. 23cm. Bibliography:
p. 204-205 F1216.G36 1965

FORM Fig. 13 a: LINE INDENTION/CONTINUATION SCHEMATIC

The following are schematics of the five entry structure patterns given in the preceding two pages.

STRUCTURE MODEL I

```
(flush)_______________   Heading
           (7)________   Heading Continuation (if any)
       (5)____________   Body
          ____________   Body Continuation (if any)
          ____________   Body Continuation (if any)
```

STRUCTURE MODEL II

```
(flush)_______________   Heading
       (5)____________   Heading Continuation (if any)
          ____________   Body
          ____________   Body Continuation (if any)
```

STRUCTURE MODEL III

```
(flush)_______________   Heading
           (7)________   Heading Continuation (if any)
       (5)____________   Print Message
          ____________   Body
           (7)________   Body Continuation (if any)
              ________   Body Continuation (if any)
```

STRUCTURE MODEL IV

```
(flush)_______________   Heading
           (7)________   Heading Continuation (if any)
              ________   Print Message
       (5)____________   Body
           (7)________   Body Continuation (if any)
              ________   Body Continuation (if any)
```

STRUCTURE MODEL V

```
(flush)_______________   Heading
           (7)________   Heading Continuation (if any)
       (5)____________   Body (main entry)
           (7)________   Body Continuation (if any)
              ________   Body Continuation (if any)
```

PROCESSING CENTER ORGANIZATIONAL DESIGN

Containing the preliminary organization of the Processing Center and keying instructions.

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I. PRELIMINARY ORGANIZATIONAL DESIGN: INTRODUCTION

This section covers preliminary specifications for setting up and developing full-scale operation of the computer based California State Library Processing Center (CSL-PC). Specifications which follow are grouped under two headings: A) The operations of the center and its organization; B) The implementation stages of the center with a proposed jobs, costs, and time plan for carrying out the work of the center.

* * *

A. OPERATIONS AND ORGANIZATION OF CSL-PC

Organizational design is considered here as having two general aspects: the overall plan of operations to be carried out, and the staffing, equipment, and facilities needed to carry out such a plan. Each aspect is discussed separately below.

OVERALL PLAN OF OPERATIONS. The plan proposed here for CSL-PC is aimed at full scale implementation in three basic areas of library functions: cataloging, serials and acquisitions, plus additional functions developed later. Each area, of course, will involve various phases. Such a plan is intended to reflect a workable interpretation of the policy and goals decided upon by California State Library, from initial to full scale operation.

Full scale operation can be considered in either the immediate or long range sense. The immediate is the completion of all the phases within the first area of cataloging, defined as full conversion and maintenance for producing the book catalog. Full scale operation in the long range is the completion of all three areas in all their phases; for example greater usage of MARC tapes in technical processing.

The immediate sense of full scale operation for cataloging is the main emphasis here. Serials can be started later and developed independently, even if concurrent with some of the implementation of cataloging, and compatible with some of the programming in the first area. Acquisitions can be developed dependent upon the success in cataloging.

The actual order of implementation leading to full-scale operation will depend first on when each area is to be initiated and second on the effective scheduling of phases once an area is started.

STAFFING, EQUIPMENT, AND FACILITIES. Staffing, equipment, and facilities for CSL-PC (and outside services) will reflect what stage of operation has actually been reached. The organizational design of CSL-PC in its internal workings is proposed as relatively stable, at least for the first area of cataloging. It will expand somewhat as more areas are implemented.

In the conversion stage of cataloging, the administrative personnel will be doing the same types of activity as in maintenance, i.e. designing and directing plans of implementation. Operational personnel in the conversion stage will be mostly preparing source copies of the huge volume of catalog cards for outside editors and assisting in the final control of converted data. In the maintenance stage, the same operational personnel will switch over and absorb the functions of editing and verifying a much smaller volume of changes going to and from outside keying and computer processing in Sacramento.

The organizational design for outside services in the conversion stage is for editing and verifying, keying, and initial programming and conversion computer processing to be done at the place where personnel are available and the work can be done most accurately and economically.

In the maintenance stage, the keying can continue to be done by an outside service (until such time as there is enough computer keying to warrant a full time keying operator and machine). The keying can be done by the same firm that does the computer processing or by a keying service within easy transportation of both the CSL-PC and the computer processing center.

STAFFING: ADMINISTRATIVE. Administrative persons are considered those who are involved in directing and planning implementation of overall policy and goals.

Systems Analyst, head of the center: He or she should be a person knowledgeable about the technical aspects of data processing, and also about the procedures and bibliographical data of libraries.

His chief responsibility is carrying out decided Cal State policy and goals on data processing, and reporting back on its implementation. His chief duty is in developing and coordinating the plan of implementation as carried out by the center and outside services, and other library operations.

Secretary to the Systems Analyst: Responsible for secretarial work and documentation done by the Systems Analyst.

STAFFING: OPERATIONAL. Operational persons are considered those who are involved in supervising and carrying out actual operations within the center or operations interconnected with other library operations or outside services.

Operations Manager, supervisor of the center: Operational responsibilities for work and documentation done by the center, and within the library's manual work as it relates to data processing.

Documentation Typist for the Operations Manager: Responsible for reports and documentation done by operational personnel.

Clerks (2) during conversion: Responsible for selecting, numbering, reproducing, and filing source copies and assisting in interim and final control/recovery of source data.

Clerks (2) after conversion: Responsible, as before, for the preparation of source copies, as well as absorbing the editing and ver verifying control of all documents. With a reduced volume of cards, less pressure in time, and possible upgrading and training, the add-additional editing and verifying can be handled without highly trained

STAFFING: OUTSIDE PERSONNEL.

Programmers from software development computer facility (State agency or otherwise): They are responsible for coding, testing, and documenting programs based on the original design specifications. Total number of programmers depends very much on experience, background and organization of the software development staff.

A single programmer can start the work, and then be joined by another as the work accelerates or a programmer becomes available. A single programmer, however, for the total years of effort necessary for complete development would not only delay final production, but would also be risky since the programmer could leave. An enormous amount of unresolved and unrecorded analysis is known only to the programmer until the program is tested and documented. Any abrupt change in programmers can be a substantial loss in effort and time.

Editors: These should be persons capable of doing detail work and, preferably, with some knowledge of cataloging. Our experiences indicate that library science students are suitable. The number of editors will depend on the projected schedule for completing the conversion.

A librarian with cataloging experience should be the supervisor for the total length of the conversion. In addition to editing, this person would coordinate the receipt of coding sheets, see to their dispatch to and from keying and computer processing, and resolve editing questions. This person would also be responsible for training new editors in the use of the coding manual.

Conversion Keyers: The number of keyers would be determined by the volume of coding sheets turned out by the editors. The keyers would key all data according to prepared instructions of required format and special symbols, and return coding sheets and keyed media to editors.

Computer Operators/Data Clerks: Obtained from the computing center. Responsible for processing and securing conversion and maintenance data.

EQUIPMENT. Equipment noted here is special to the center and its operations, and does not include regular equipment normal to most offices, such as typewriters, cabinets, furniture, etc. It also does not include a computer, which is not owned or operated by the center during initial operation.

Numbering machine: A Cummins 272 machine with continuous numbering can be leased at $840 per year, or purchased at three times lease price.

Reproduction machine: A Xerox machine (lease only) costs only 2 1/2 ¢ a copy, plus materials and labor. (This cost figures a minimum number of copies per month, a number well below the anticipated production of the Processing Center.)

Two work tables and one storage cabinet: Required during conversion. One table for numbering and selecting, the other for assembling completed copies which are stored in the cabinet in flat reams of paper.

One tab card and one document cabinet: Required during maintenance for storing keyed data and computer printouts for verification and reference.

FACILITIES: SPACE FOR PERSONNEL. Basic space will be required for the administrative head and secretary, for operations manager and typist, and for two operational clerks working at desks during conversion on documentation and control, and in addition on editing and verifying during maintenance.

FACILITIES: SPACE FOR EQUIPMENT. Space will be needed for work table and numbering machine preferably near the catalog during numbering, selecting, and refiling cards.

Space of relatively noise-contained room will be needed for reproduction machine, along with the assembly table storage cabinet for completed packages of source copies.

B. STAGES OF IMPLEMENTATION

Stages of implementation are discussed here from the point of view of the supervision of the total process in which the stages actually occur. The effectiveness of these actual stages is considered dependent upon ititial scheduling and rescheduling where appropriate.

INITIAL SCHEDULING. Implementation can begin in cataloging with serials implemented independently. In order to have direct access to MARC II tapes, acquisitions should be started after the cataloging phase is completed.

The start and termination of any implementation, of course, is dependent on the manpower and funds available, on the successful completion of logically prior phases, and on the inherent complexity of procedures involved and their potential interrelation in a unified dynamic system. Once the goals are set, the rate and the order in which a stage should be implemented will depend on resources, actual performance, and the complexities of procedures being implemented.

It is recommended that implementation in any phase or area wait until separate programming and supporting manual work are feasible and can be done without delaying implementation of any phase already started.

RESCHEDULING. A schedule for implementation will include periodic review, report, and adjustment as the work proceeds. Such reviews serve to combine the functions of monitoring, documenting, and (where necessary) re-estimating and rescheduling parts of each job.

II. KEYING INSTRUCTIONS (GENERAL)

GENERAL INFORMATION

KEYPUNCHING OF CATALOG-RECORD CODING SHEETS. Each coding sheet constitutes one record. If sheet is ready for punching, it will have:

a. 6-digit record number	(Upper right corner)
b. Reproduction of 3x5 catalog card	(Upper right corner)
c. Editor's initials in box	(Lower right corner)

If not ready, please note and return to Control Supervisor.

MAKE PROGRAM CARD like the one below:

Field:	Record No.	Card No.	DATA
Columns:	1-6	7-8	9.........................80
Program Card:	&&&&&&	&	1AAAAAAAAAAAAAAAAAAAAAAAAAAA

This allows: 1) numeric punching in Record and Card numbers without holding down numeric shift, 2) manually controlled duplication of Record number after first card, and 3) automatic release of card when data exceed last column.

PUNCH A DECKLET of cards for each coding sheet, with a sequence of:

Field:	Record No.	Card No.	
Columns:	1-6	7-8	9................................80
Card 1:	xxxxxx	01	(FREE FORM CONTINUOUS STRING)
Card 2:		02	No spaces between field codes without data.
Card 3:		03	No spaces between field codes and data.
...		..	Normal or marked spacing within data of catalog card (A and B fields).
...		..	
...		..	Through column 80 in every card except last decklet card. Punch + to indicate end-of-record.
Last		xx	

Every card in a decklet MUST have a record number (initially punched from upper right corner of coding sheet; suplicated thereafter) and a card number (entered in ascending sequence by keypuncher).

ORDER OF KEYPUNCHING

GENERAL SUMMARY. Begin at the upper left of sheet. Go from top to bottom through the first, second, and third columns of the checklist portion of the sheet (i.e., the I-fields) which surrounds the catalog card. Then proceed to the catalog card in upper right corner.

I-FIELDS: CHECKLIST PART OF CODING SHEET.

The codes are in alphabetic order. There are two kinds of code boxes: one which will be checked and one which will have data (the latter has an enclosed box). If a code box is checked, punch only the two-letter code. Some code boxes may contain data ('sa', 'ua', 'wa', etc.); if so, punch the two-character code and the data as well.

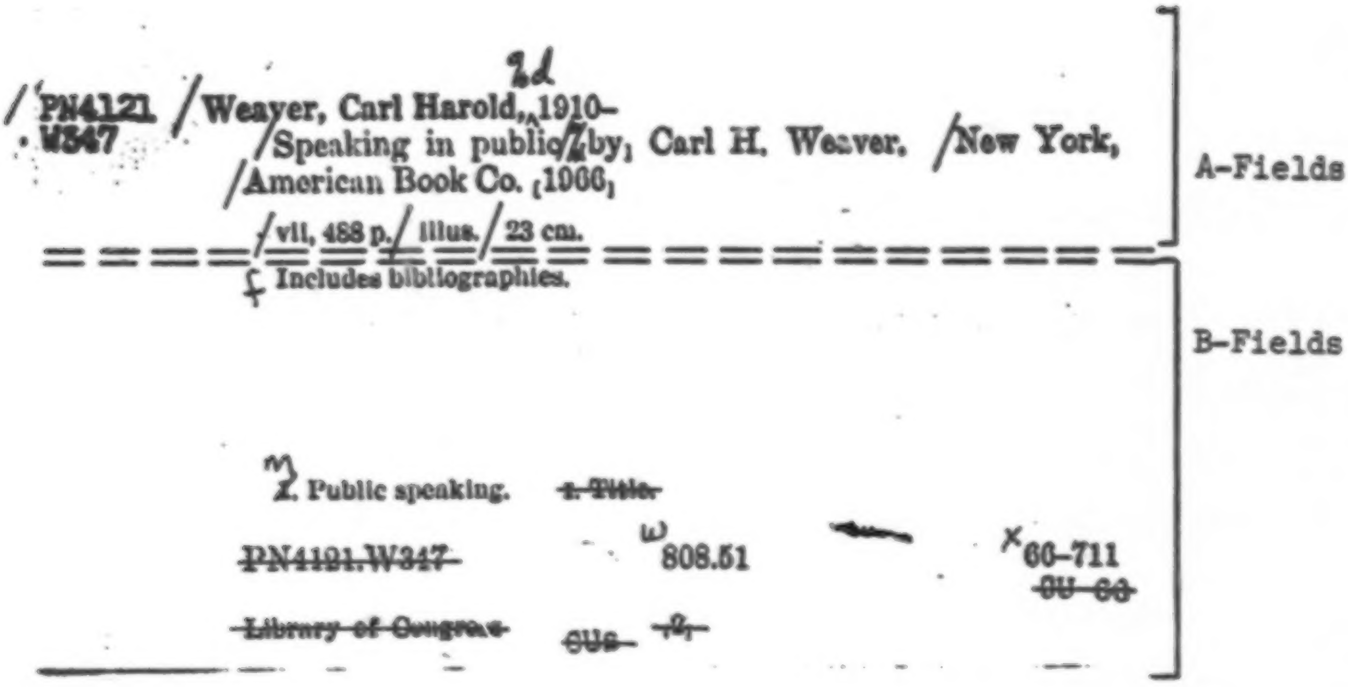
DO NOT PUNCH explanatory legends to the right or left of code boxes.

DO NOT SPACE between codes or data. Even if code or data breaks in column 80, do not add any space or hyphen in column 9 of next card.

EXAMPLES of three types of entries to be punched:

Shown on Coding Sheet:	Type of Entry:	Punch:
Date 1 Date 2 1965 1966	Data only (no code)	19651966
ha ✓ abstracts	Code only	HA
sa eng%Fre % lang.	Code and data	SAENG%FRE%

A-FIELDS
B-FIELDS } CATALOG CARD PART OF CODING SHEET.



/PN4121 /Weaver, Carl Harold, !d 1910-
.W347
/Speaking in public/ [by] Carl H. Weaver. /New York,
/American Book Co. [1966]
/vii, 488 p./ illus./ 23 cm.
f Includes bibliographies.

m 1. Public speaking. ~~I. Title.~~
~~PN4121.W347~~ w 808.51 x 66-711
~~Library of Congress~~ ~~[5]~~

A-Fields
B-Fields

A-FIELD CODES: SLASHES. TEN SLASHES are to be punched for each catalog card on a sheet, whether there is data or not after each slash. For example, two slashes mean that no data occurs in the former, but both are to be punched without any spaces. This will instruct the computer program how to interpret the remaining fields.

FIRST FIELD: CALL NUMBER. BEGIN with the first slash in the upper left of the catalog card, to the left of the author heading. Punch all the lines of alphameric and special marked characters.

REST OF A-FIELDS. START with the slash before the author heading. PUNCH the rest of the A-fields, down through the final (10th) slash. The last A-field slash usually occurs with the size of the book, e.g., /23 cm.

B-FIELD CODES: LETTERS. B-FIELDS include all the rest of the data in the catalog card. B-field codes are written in either as single lower case letters (such as m, s, w, x) or as two-character combinations (such as !b, !f, !v).

ADD AN ASTERISK (*) to all single character B-field codes, so that m will be punched as *m, s as *s, w as *w, x as *x. This is not done for two-character codes.

PUNCH codes and data without an intervening space, for example, *w808.51. If the data is crossed out but a code is present, punch only the code.

GENERAL INSTRUCTIONS **See List of Standard Proofmarks following this section.**

SPACING.

PUNCH NORMAL SPACE within data in each field, whether marked or not. ONE space may be marked △ as a reminder. MORE THAN ONE space will be indicated by a corresponding number of space marks: △ △ ....

DO NOT SPACE before or after a slash.

DO NOT SPACE between codes and data.

IGNORE tabs, indentations, etc.

REMINDER ABOUT WORDS at the end of a card: SPACE on the next card if a word ends in column 80.

DO NOT SPACE OR HYPHENATE on next card, if a word breaks in the middle at column 80.

CAPITALIZATION.

UPPER CASE: PUNCH two characters "_A" (Underscore A) if upper case "A" shows without marks on coding sheet, or upper case shows as or lower case is marked as "$\underline{\underline{a}}$".

LOWER CASE: PUNCH one character "A" if:

1) lower case "a" shows without marks.
2) upper case is marked as "$\cancel{A}$".

BRACKETS will be punched as ⟨ and ⟩ .

LOGICAL-NOT SIGN.

1. The "logical-not" character "¬" in any column 9 to 80 will cancel any other single character of data (space included) which immediately precedes it.

2. The "logical-not" in column 9 will cancel the character in column 80 of the previous card of the same decklet.
3. The "logical'not" does not have any meaning in columns 1-8.

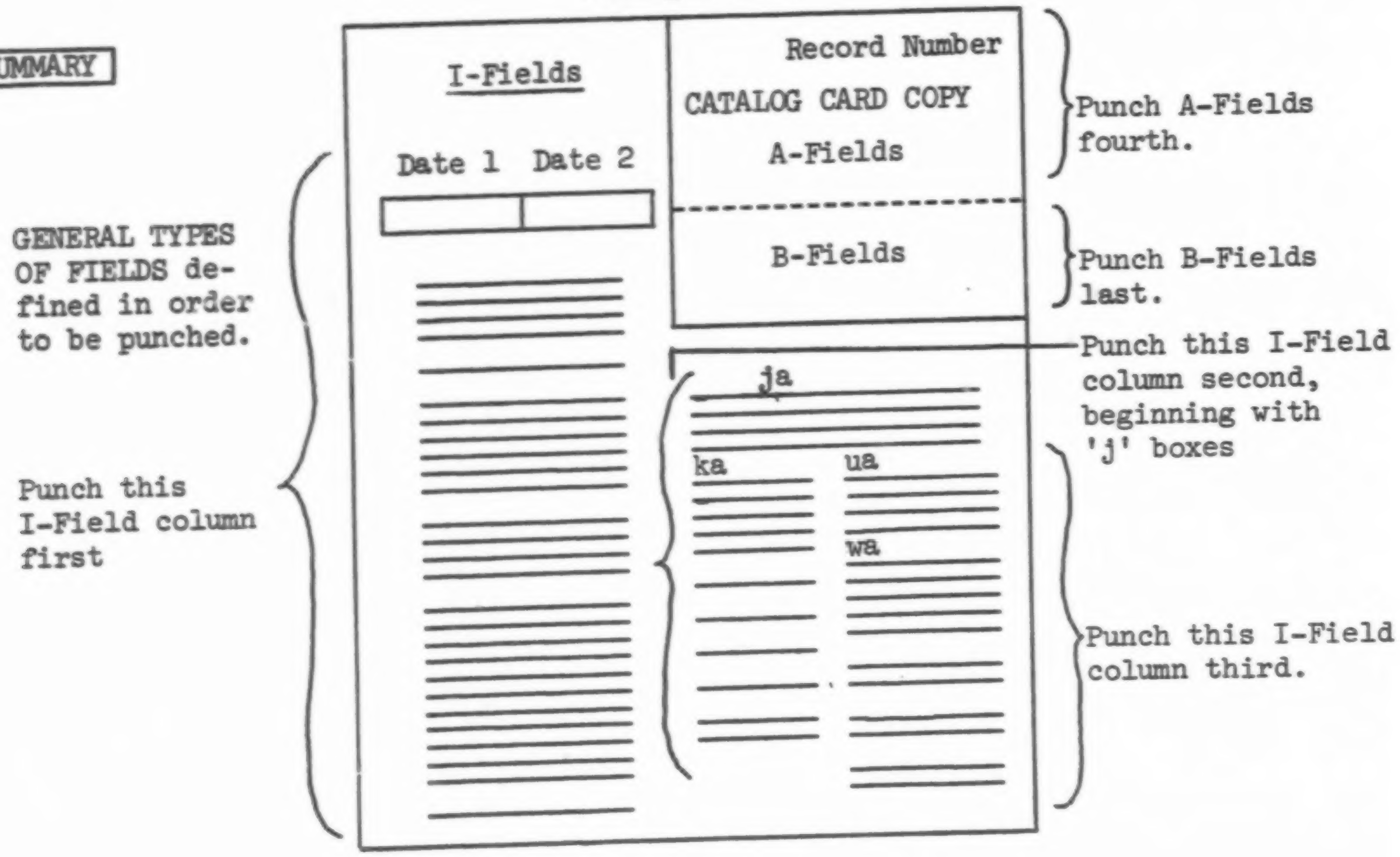
END-OF-RECORD. PUNCH + immediately after data ends, and skip out. If data ends in column 80, punch + in column 9 of next card as last of decklet.

KEYPUNCHER'S NOTATION. INITIAL coding sheet as done, with date and time spent, in Keypuncher box.

VERIFICATION. KEEP cards within each decklet in unique and ascending card number order. KEEP decklets corresponding to order of coding sheets.

Coding Sheet:

SUMMARY


I-Fields
Date 1
Date 2
Record Number
CATALOG CARD COPY
A-Fields
B-Fields
ja
ka
ua
wa
Punch A-Fields fourth.
Punch B-Fields last.
Punch this I-Field column second, beginning with 'j' boxes
Punch this I-Field column third.
GENERAL TYPES OF FIELDS defined in order to be punched.
Punch this I-Field column first

I-Fields = Added Description of copy of Catalog card, with alphabetic field codes, Checklist boxes, and alphameric data, plus some subfield codes of %.

A-Fields = Main Body of Catalog card data with 10 required slashes (/) as field codes, all data characters, and varying subfield codes of #, ¢, and $. (Top half of Catalog Card copy).

B-Fields = Notes, Tracing, etc. of Catalog data with 1 or 2-character field codes. Single characters require an *. Fields to be punched in order as on card, not alphabetically. Subfield codes of ¢ and $. (Lower half of Catalog card).

On the following two pages are a sample coding sheet and a keypunched version of the same. Immediately below are the proofreading marks which will be used in the catalog card portion of the coding sheet.

LIST OF STANDARD PROOFREADING MARKS

SYMBOL	EXPLANATION
Δ	Space
⁀	Close up
^	Insert
~~and~~	Delete
✗	Delete
$\underline{\underline{\underline{a}}}$	Make upper case (Capitalize)
A̸	Make lower case (Decapitalize)
∽	Transpose
⤻	Rearrange
0	Zero
O̸	O (letter)
/	Slash
1	One
I	Upper case i (letter)
Ƶ	z (letter)
2	Two
ℓ	Lower case L (letter)

PC-ORG Fig. 1: SAMPLE CODING SHEET.

123456

CSL PROCESSING CENTER
INPUT CODING SHEET:
MONOGRAPHS

● Date 1	Date 2
1966	

● DATE TYPE:

bc	2 dates: 2d is ©
bm	multiple date span
bn	date not known
bq	digits missing
br	prev. published

ca	LC call no. is bracketed

CATALOG SOURCE:

ea	NAL
eb	NLM
ec	Coop. Cat.
ed	NUC
ee	other
ef	orig. cat.

FORM OF REPRODUCTION:

ga	microfilm
gb	microfiche
gc	micro-opaque
gd	large-print

CONTENT FORM:

ha	abstracts
hb	bibliographies
hc	catalogs
hd	dictionaries
he	encyclopedias
hh	hndbks./manuals
hi	indexes
hp	progrmmd. texts
hr	directories
hs	statistics
hy	yearbooks

TYPE OF WORK:

ia	juvenile
ib	fiction
ic	autobiography
id	biog.-indiv.
ie	biog.-coll.

/PN4121 /Weaver, Carl Harold, 1910- 2d
.W347 /Speaking in public/ ,by, Carl H. Weaver. /New York, /
/American Book Co/ ,1966,
/vii, 488 p. /illus. /23 cm.
f Includes bibliographies.

m /1. Public speaking. ~~I. Title.~~

S ~~PN4121.W347~~ ◯ W 808.51 X 66-711
~~Library of Congress~~ ~~CUS~~ ~~66-63~~

● TYPE OF ADDED ENTRY:

Series traced same as note	ja									
Series traced differently from note	jr									
Subject headings and subdivisions	jm	ta								
Non-subject/non-series tracings	jq									

GOVERNMENT PUBLICATION:

ka	U.S. Federal
kb	Cal State
kc	Cal Co./Muni.
kd	international
ke	other govts.

ma	conference pub.

na	non-keyable data

qa	cancel title added entry same as title

ra	card lacks title traced same as short title

sa		% lang.

ta	translation

MAIN ENTRY HEADING:

● ua		type of main entry
ub		m.e. is subject
uc		m.e. is publisher
ud	✓	m.e. repeated in body

HOLDINGS:

	System ●	+Br ●	Total Copies Here
● wa	004	90	
wb			
wc			
wd			

● = must always be filled in
●. = must frequently be filled in

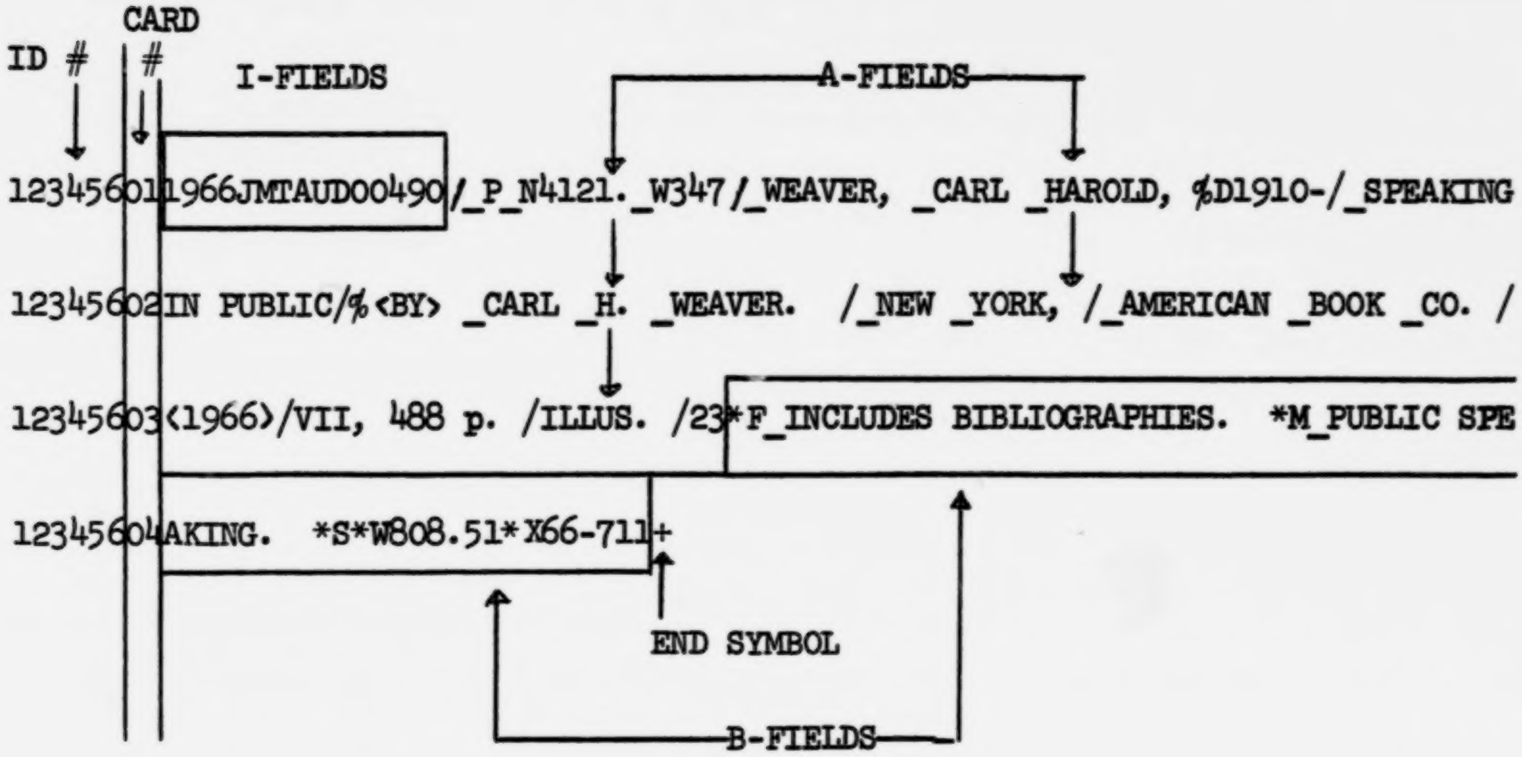
● EDITOR rms

Mo.	Day	Yr.	Minutes
01	27	69	02

KEYPUNCHER

Mo.	Day	Yr.	Minutes

PC-ORG Fig. 2 : KEYPUNCHED VERSION OF SAMPLE CODING SHEET (PC-ORG Fig. 1)



```
12345601 1966JMTAUD00490/_P_N4121._W347/_WEAVER, _CARL _HAROLD, %D1910-/_SPEAKING
12345602IN PUBLIC/%<BY> _CARL _H. _WEAVER.  /_NEW _YORK, /_AMERICAN _BOOK _CO. /
12345603<1966>/VII, 488 p. /ILLUS. /23*F_INCLUDES BIBLIOGRAPHIES.  *M_PUBLIC SPE
12345604AKING.  *S*W808.51*X66-711+
```

CARD
ID #
#
I-FIELDS
A-FIELDS
END SYMBOL
B-FIELDS

III. ROMAN DIACRITICS: KEYING INSTRUCTIONS

For the purposes of the discussion to be pursued here, it is assumed that only Roman alphabet catalog cards will be selected for conversion to MARC II. That is, only those symbols normally found in the alphabets of the European languages will be included at conversion input time. Cards in languages will be included at conversion input time. Cards in languages that use different orthographies - such as Arabic and Russian - will be selected out and not submitted for editing or keypunching.

Normal symbols. Defining what is meant by Roman alphabet symbols is initially an easy matter: the basic 26 letters of the English alphabet, plus the numbers from 1 to 10, plus some common symbols such as the question mark, the exclamation point, the colon, etc. An even simpler way of defining what is meant by Roman alphabet symbols is to use those symbols that normally appear on typewriter keyboards. Table 1 shows a typical range of such normal symbols. More than just the above-mentioned, simple list of symbols is needed to represent such things as the Icelandic thorn, the "backwards" question mark in Spanish, and such common diacritical marks as the tilde, umlaut, cedilla, accent grave, etc. These high frequency diacritics are given in Table 2.

USASI HEXADECIMAL BASE. The Library of Congress, in its August 1968 Subscriber's Guide, states that "MARC tapes will follow standards set by the United States of American Standards Institute (USASI) for the interchange of information on magnetic tape." (p. 4). Since the Processing Center record is to be MARC II compatible, diacritic marks used in encoding Processing Center data will conform to this same standard. Simplicity of both coding and conversion are desirable here as elsewhere in the Processing Center system. To achieve such simplicity it has been decided that input codes for Roman diacritics will be based directly on the hexadecimal form of the eight-bit ASCII code for a given diacritic or special character (see below).

Code components. The phrase "based directly on the hexadecimal form of the eight-bit ASCII code" means that the hex codes themselves are taken as the basis for encoding a given symbol. So that such codes will not be confused with "normal" characters in the data stream, an equals sign (=) prefixes each set of two hex characters to create a unique, three-character code. An example of a table utilizing such three-character codes to handle Roman diacritics and special characters for a moderately complex input stream is provided in Table 4. Experience will show that some diacritical marks and special characters occur on catalog cards much more frequently than others. A strong argument can be made for a two-character coding scheme to cover frequently encountered Roman diacritics. A later, more highly developed stage of the conversion effort can provide such levels of sophistication. For the present, conformity with a national standard offers more payoffs than any economies in coding a few fields now afford.

Supplemental symbols. While sufficiently rich for most applications, the eight-bit ASCII codes still lack some symbols that may be considered desirable for inclusion in the character set. Examples are the "backwards" question mark and exclamation point in Spanish. If it proves advisable to include such characters in a conversion effort, unassigned hex codes from the ASCII table can be used. Realize, however, that the use of unassigned codes may produce later conflicts with the standard if the latter opts for an alternative meaning for the same code.

Where to place codes. A symbol to be coded must be recognized by the editor as a diacritical mark or special character requiring special encoding. Using Table 4, the editor looks up the appropriate code for that symbol. The correct code is then placed in the input data stream at the appropriate point. The appropriate point of insertion for special characters (such as the Icelandic thorn) is that character's normal position in the data stream. The appropriate insertion point for a diacritical mark or marks associated with some letter, is the space immediately following such letter. The examples provided in Table 3 should be consulted in detail.

It can be correctly inferred from the above that input editors will be doing the table lookup required to handle Roman diacritic encoding. Space constraints - always a problem on cramped coding sheets - suggest that the editors use "balloons and arrows" to point out such coding to the keypunch operator. The space now available in the lower left quadrant of the coding sheet is best suited to this purpose.

EXAMPLE TABLES. Table 3 shows some selected Roman diacritic strings and their corresponding coded forms. The purpose is to provide keypunchers and editors with examples from which to deduce correct Roman diacritic encoding. In the table, input strings involving Roman diacritic problems are placed inside a box. Immediately following each such box is a second box. This box contains the keypunched version of the input string presented above it.

Note that the examples given in Table 3 do not contain the codes and tags that would normally appear with input data. These are omitted to avoid confusion of over-crowded examples.

Device used in examples. Whenever specific input examples are given, some specific input device must also be given. In this discussion the device chosen is an IBM 029 keypunch. The range of symbols offered on the keyboard of this machine is given as Table 1.

TABLE 1: CHARACTER SET USED ON 029 KEYPUNCH

A	N	1	%	:
B	O	2	$	#
C	P	3	¢	+
D	Q	4	(	- (hyphen or minus)
E	R	5	)	_ (underline)
F	S	6	<	' (apostrophe)
G	T	7	>	" (quotation)
H	U	8	/	| (vertical bar)
I	V	9	?	¬ (logical not)
J	W	0	!	
K	X	&	=	
L	Y	*	.	
M	Z	@	,	

TABLE 2: HIGH FREQUENCY ROMAN DIACRITICS

GRAPHIC	NAME OR FUNCTION	CODE
´	Acute	=E2
•	Angstrom	=EA
˘	Breve	=E6
¸	Cedilla	=F0
^	Circumflex	=E3
`	Grave	=E1
ˇ	Hacek	=E9
,	High Comma	=ED
(	Ligature - left half	=EB
)	Ligature - left right	=EC
-	Macron	=E5
~	Tilde	=E4
..	Umlaut	=E8

TABLE 3:

SELECTED EXAMPLES OF ROMAN DIACRITIC ENCODING USING CSL-PC CODES

Götz, František.
_GO=E8TZ, _FRANTIS=E9[illegible]K.

Jasnící se horizont;
_JASNI=E2CI=E2 SE HORIZONT;

Żeromski, Stefan,
_Z=E7EROMSKI, _STEFAN,

powieść.
POWIES=E2C=E2.

Łódz,
_=A1O=E2DZ]

Paryż, Polskie Tow. Przyjaciół
_PARYZ=E7, _POLSKIE _TOW. _PRZYJACIO=E2=B1

Ibn al-Nafīs, ʻAlī ibn Abī al-Ḥazm, 1210 *or* 11-1288.
_IBN AL-_NAFI=E5S, [illegible]_ALI=E5 IBN _ABI=E5 AL-_[illegible]AZM, 1210 OR 11-1288.

Paixão, Lyra.
_PAIXA=E40, _LYRA.

(Cadernos de educação, 4)
(_CADERNOS DE EDUCAC=F0A=E40, 4)

Søren Kierkegaard
_S=B2REN _KIERKEGAARD

I oversættelse ved Hans Olrik.
_I OVERS=B5TTELSE VED _HANS _OLRIK.

Strazdiņš, Laimonis, 1922-
_STRAZDIN=A03=E9, _LAIMONIS, 1922-

At head of title: Butkų Juzė
_AT HEAD OF TITLE: _BUTKU=[illegible] _JUZE=E7.

TABLE 4: CSL-PC ROMAN DIACRITIC CODES

GRAPHIC	NAME OR FUNCTION	CODE
ʼ	Alif	=A0
Ł	Polish upper case "L"	=A1
Ø	Scandinavian slashed "O"	=A2
Đ	"D" with cross bar	=A3
Þ	Icelandic thorn - upper case	=A4
Æ	Special character	=A5
Œ	Special character	=A6
ʹ	Miagkiy znak or soft sign	=A7
·	Dot in middle of line	=A8
♭	Musical flat	=A9
R	Subscript Patent mark	=AA
±	Mathematical plus/minus sign	=AB
ơ	Special character	=AC
ư	Special character	=AD
ʻ	Ayn	=B0
ł	Polish lower case "l"	=B1
ø	Scandinavian slashed "o"	=B2
đ	"d" with cross bar	=B3
þ	Icelandic thorn - lower case	=B4
æ	Special character	=B5
œ	Special character	=B6
ʺ	Tverdyi znak or hard sign	=B7
ı	Turkish undotted "i"	=B8
£	British pound sign	=B9
ð	Eth	=BA
ơ	Special character	=BC
ư	Special character	=BD
¿	Spanish question mark	=BE
¡	Spanish exclamation point	=BF

(con't. on next page)

TABLE 4: CSL-PC ROMAN DIACRITIC CODES (con't)

GRAPHIC	NAME OR FUNCTION	CODE
ˀ	Pseudo question mark	=E0
˙	Superior dot	=E7
˝	Double acute	=EE
ᵕ	Candrabindu	=EF
˛	Right hook	=F1
.	Dot below a character	=F2
..	Double dot below a character	=F3
˳	Circle below a character	=F4
=	Double underscore	=F5
_	Single underscore	=F6
˒	Left hook	=F7
¸	Right Cedilla	=F8
_	Upadhmaniya	=F9
╭	Double tilde	=FA
╯	Double tilde	=FB
°	Degree sign	=FC
ʼ	Centered high comma	=FE
¨	Dieresis	=FF